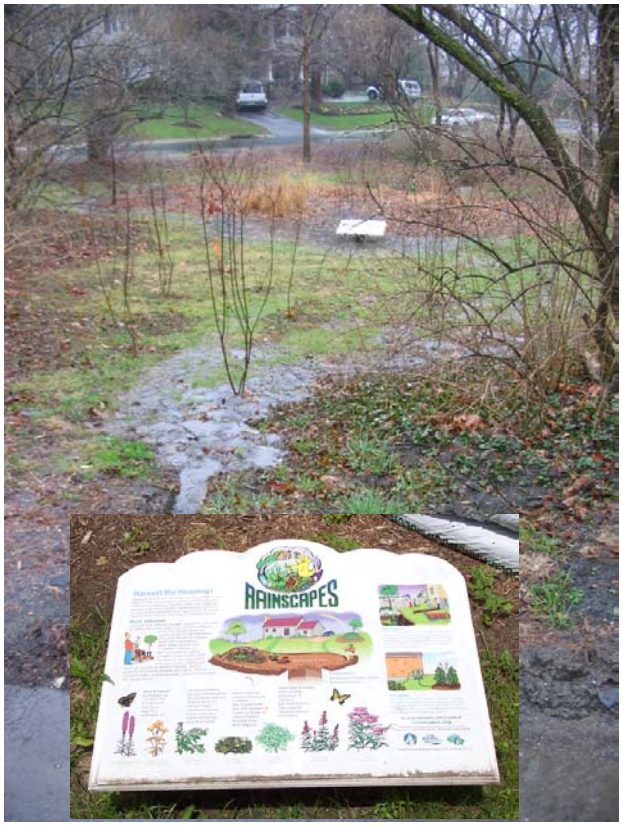
00-DP-3320 MD0068349 AUGUST 2005

Annual Report NPDES Municipal Separate Storm Sewer System Permit



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for the Maryland Department of the Environment

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LIST OF ACRONYMS

BMP Best Management Practice

CIP Capital Improvement Program

USACE U.S. Army Corps of Engineers

DEP Department of Environmental Protection

DPS Department of Permitting Services

DPWT Department of Public Works and Transportation

EPA U.S. Environmental Protection Agency

GIS Geographic Information System

IBI Index of Biological Integrity

MDE Maryland Department of the Environment

MDP Maryland Department of Planning

MNCPPC Maryland National Capital Park and Planning Commission

MS4 Municipal Separate Storm Sewer System

NPDES National Pollutant Discharge Elimination System

USGS U.S. Geological Survey

WSSC Washington Suburban Sanitary Commission

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REFERENCES

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ATTACHMENT A.
COMPACT DISK WITH THE FOLLOWING ELECTRONIC FILES

storm drains folder GIS Storm drain files for the Towns of Kensington and Poolesville

SWP3 folder (doc files) ANNUAL SITE ASSESSMENTS
Bethesda/Seven Locks, Brookeville/Silver Spring, Colesville, and Poolesville Highway Maintenance Depots
Damascus Highway Maintenance Depot
Equipment Management Operations Center (EMOC)
Gaithersburg Highway Services
Gude Landfill
Oaks Landfill
Transfer Station/Materials Recycling Facility

2004 Stormwater Design_Appendix.doc Monitoring method and cross-sections for Design Manual monitoring

APPENDIX.doc Annual Report Databases

MDENPDES04.mdb Required information in ACCESS 2000 database.
Urban Best Management Practices
NPDES Construction General Permits
Erosion and Sediment Control Responsible Personnel Training Certification
Illicit Discharge Program (and type codes)
Chemical Monitoring Site
Continuous Flow Monitoring
Chemical Monitoring Storm Event Data
Stormwater Programmatic Information
Stormwater Implementation Information

waterpermits04.xls MDE's Water Permits for Montgomery County during 2004.

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MONTGOMERY COUNTY MARYLAND
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
MUNICIPAL SEPARATE STORM SEWER SYSTEM DISCHARGE PERMIT

I. BACKGROUND

This submission fulfills the requirement for an annual progress report to the Maryland Department of the Environment (MDE) as specified in Part V of Permit Number 00-DP-3320 MD0068349 (the Permit). The five-year Permit term began July 5, 2001, covering stormwater discharges from the municipal separate storm sewer system (MS4) in Montgomery County, Maryland. Significant accomplishments in the County's stormwater management program during the 2004 calendar year are highlighted in the Overview. The report itself has been organized based on the headings in the Permit's Section III. to document how specific required elements of the County's stormwater management program are being implemented. The database format for electronic submission is included on compact disc in Attachment A. This includes the field names, formats, and explanatory information provided by MDE.

The Montgomery County Department of Environmental Protection (DEP) has primary responsibility for the majority of the requirements of the Permit, including interagency coordination, annual reporting, source identification, discharge characterization, monitoring, stormwater facility inspection and maintenance enforcement, illicit discharge detection and elimination, watershed public outreach, and watershed restoration plans. The Department of Permitting Services (DPS) is responsible for the County's Stormwater and Sediment and Erosion Control Program. The Department of Public Works and Transportation (DPWT) is responsible for storm drains, road and roadside maintenance, solid waste disposal, and the General Permit for Storm Water Discharges Associated with Industrial Facilities at the County-owned vehicle and road maintenance and solid waste management facilities.

The Maryland Department of the Environment (MDE) modified the County's Permit effective January 26, 2004 to add six small localities as co-permittees for coverage under the Phase 2 of the National Pollutant Discharge Elimination System (NPDES) MS4 Permit Program. There were five municipalities: the Towns of Chevy Chase, Kensington, Poolesville, and Somerset, and Chevy Chase Village; and one special tax district, the Village of Friendship Heights. This report includes an update on the Permit-related programs for these six localities.

In September 2004, the U.S. Environmental Protection Agency (EPA) conducted an audit of the County's compliance with its Permit. The audit was generally favorable and a summary of the results is included in the Special Programmatic Considerations of this report.

This is the fourth report in this five-year permit cycle. As requested by MDE, this annual report includes the information needed to develop the next Permit for the County. The proposed major components to be included in the next Permit cycle are included under the Special Programmatic Considerations.

II. OVERVIEW

Source Identification

The Permit requires Montgomery County to inventory and map potential pollutant sources and means of conveyance into receiving streams and other water bodies.

- Storm Drain System Mapping: The County continues its electronic inventory and mapping of the County-owned system. Significant progress was made to complete geographic information system (GIS) mapping of storm drain components added since the last comprehensive submission in 1998. This includes submissions for the Towns of Kensington and Poolesville, co-permittees which have retained responsibility for storm drain maintenance. The drainage area mapping to major outfalls in the County is not yet completed.

- Permitted Facilities: The DEP has completed an electronic inventory of MDE-issued water quality permits and local emergency planning council (hazardous materials) but has not yet completed the comprehensive database that will connect its environmental enforcement database to mapping information on permitted and other potential pollution sources.

- Urban Best Management Practices (BMPs) database: The County's urban BMPs database currently shows 3,519 records. The three structure types with the greatest number are Oil Grit Separator (797), Dry Pond Quantity Control Only (503), and Infiltration Trench Quality Control Only (418). The DEP continues its efforts to find information from existing paper files for all facilities constructed prior to the County's first Permit (1996), as well as to update our existing electronic records of stormwater facilities. This effort is approximately 50 percent finished and has resulted in the removal of over 200 records with inaccurate data The DEP expects that at least 200 to 300 more facilities will be removed from the database over the next coming year.

Discharge Characterization

The Permit requires that "Montgomery County shall contribute to Maryland's understanding of stormwater runoff and its effect on water resources by conducting a monitoring program."

- Long-term Discharge Characterization: The County continues monitoring at the Stewart-April Lane Tributary and in the Lower Paint Branch mainstem. The stormwater retrofit construction on the tributary has been delayed until late 2005. For 2002-2004, the County successfully monitored 26 storm events with all seasons except winter well-represented. During the winter months, melting snowfall created difficulties in determining "start" of storm events from immediately-preceding rain. For the integrated monitoring at these sites, the DEP has five years of pre-construction biological and physical habitat data at the Stewart-April Lane tributary station and three years of data at mainstem lower Paint Branch stations upstream and downstream of the tributary. The first year of geomorphological data is included in this report.

- Design Manual Monitoring: The County continues monitoring in the Clarksburg area for the effectiveness of the Maryland 2000 Stormwater Design Manual. Some changes in cross sections in both the control (undeveloped) and test (developing) areas have been noted. The quality of the biological community in the test area has degraded since the first year of monitoring. With

only two years of geomorphologic data, there is no strong correlation as to why the benthic community quality has shown a decline.

Management Programs

The Permit requires that the County maintain specific jurisdiction-wide management programs to control stormwater discharges to the maximum extent practicable.

- Stormwater Facility Maintenance: The DEP performed 998 initial inspections in 2004 to assess the repair and maintenance needs of stormwater management facilities. These initial inspections identified need for repair at approximately 59% of all structures--about 88% of the aboveground structures and 39% of the underground structures. In contrast, during 2002, initial inspections identified some sort of repair was needed at 89% of the aboveground structures and 63% of the underground structures.

- Stormwater Facility Permitting: Of the 951 total structures approved during 2004, the number of nonstructural practices (407) far exceeded that for any type of structural treatment device. Part of the reason for this increase was better and more thorough reporting of the design and installation of nonstructural controls. A more significant factor was the timing after adoption of the Maryland 2000 Design Manual criteria. A third factor was the redevelopment of a number of residential lots where structural controls are impractical. Examples of non-structural controls include rooftop runoff disconnection and drainage to vegetated buffers or grassed swales.

- Outfall Screening: The DEP screened a total of 124 outfalls with 23 having dry weather flows. The focus was on outfalls contained within the drainage areas of eight biological monitoring sites that showed impairment during 2003 due to factors not directly attributable to physical habitat degradation. These eight reaches were located in Lower and Upper Rock Creek, Muddy Branch, and Watts Branch. Of the 23 outfalls with dry weather flows, three showed detergent above detection limit with all other parameters (Phenol, Chlorine and Copper) below detection limits. Source tracking for these outfalls was unsuccessful. During the next year, the DEP intends to conduct pilot biological toxicity testing at 15 of these screened outfalls to determine whether toxicity is present, and if so, if it is more prevalent after stormflow events or during dry weather flows.

- County's Industrial Facilities: In general, the annual assessments found that compliance with the Stormwater Pollution Prevention Plans was good. Three long-standing issues need to be addressed: updating the Stormwater Pollution Prevention Plans to reflect current operations at these facilities; eliminating outdoor vehicle washing as a non-stormwater discharge; and providing more routine employee training to enhance pollution prevention awareness.

- Public Education and Outreach: The County continues a multimedia approach for public outreach and education to increase environmental stewardship. Programs include workshops, print, video, web-based materials, and project-specific outreach for watershed restoration. The "Rainscapes" program is one of the newest, with a focus on inexpensive and low technology approaches to control runoff. The six rain gardens planted to date under this project provided 3,425 sq. ft. of control for runoff from rooftops, mowed grass, gravel parking lots, and

residential streets. The 167 rain barrels provided through the "Make and Take Rain Barrel" workshops provide storage of up to 9,185 gallons of water during each rain storm.

- Pollution Prevention and Environmental Policy**:** All County Agencies and Departments were required to develop an Environmental Action Plan (EAP) by June 30, 2004 to document existing efforts for environmental protection or improvement and also set goals for the coming year. Priority issues for the EAPs included: 1) Energy, 2) Pollution Prevention, 3) Environmental Preferable Purchasing; and 4) Green Buildings Practices. While not all departments and agencies have equal impacts on the environment, each has shown a commitment to reduce negative impacts over the next year and beyond.

- Road Maintenance and Pollution Prevention: This includes storm drain maintenance, roadside maintenance, and practices to reduce impacts from highway operations. During 2004, the DPWT cleaned approximately 2 miles of storm drains representing about 0.2% of the total length of County storm drains. About 6.8% of the 49,350 tons of de-icing materials applied were collected during the once-per-year street sweeping of arterial roads. The Town of Kensington has begun assessing the condition of its 6.8-mile storm drain system and developing a plan for routine maintenance, including the establishment of a capital improvement program (CIP) budget.

- Integrated Pest Management (IPM): The County continues to implement its IPM program at county owned facilities, with an emphasis on physical rather than chemical measures for pest control. While the square footage to be managed increased, the total amount of chemical controls used decreased from 2003 to 2004. No fertilizers were applied at any of the 98 facilities covering 250 acres in the County landscaping program.

Watershed Restoration

The Permit requires that the County continue its systematic assessment of water quality within all of its watersheds and to maximize water quality benefits in priority subwatersheds using efforts that are definable and the effects of which are measurable. Total cost through December 2004 (including State and Federal cost-share funding) for watershed studies completed or ongoing is $6.077 million and for stormwater retrofits or restoration projects completed is $7.310 million dollars.

- Watershed Screening: During 2004, 44 stations were screened in four watersheds: Little Paint Branch, Lower Patuxent River, Northwest Branch, and Paint Branch. Of these, six (14%) had impaired fish and benthic macroinvertebrate communities and were identified as having impairment other than that which could be attributed to habitat conditions alone. Two of these, one in Northwest Branch and one in Paint Branch, are located within areas with planned stormwater retrofits and possible stream restoration projects. The remaining four stations will be investigated as part of the County's illicit discharge screening program for the coming year.

- Selected Restoration Watershed: The County selected the Turkey Branch subwatershed for the Permit-required watershed restoration. Design and construction of restoration and retrofit projects have been delayed because of site constraints and administrative requirements associated with federal transportation program grant funds. Two new stormwater management ponds to add control for 217 acres and a dry pond retrofit for 189 acres are expected to be

constructed during 2006. Two stream restoration projects in Lower Turkey Branch, covering impacts in 1.7 linear miles of stream, are expected to be completed by Spring, 2007. Pre-construction monitoring was conducted during 2002 and 2003. Post-construction monitoring will take place one year, three years and then five years after completion of the projects to assess changes in stream condition.

- Next Restoration Watershed: Lower Paint Branch: The County has proposed the Lower Paint Branch subwatershed as the next for the Permit-required watershed restoration. Stream resource conditions are degraded due to the intensity of development and lack of stormwater management in the contributing drainage areas. Specific stream restoration and stormwater management opportunities have been identified for two tributaries: the Hollywood Branch and Snowdens Mill Tributary subwatersheds.

Program Funding

The Permit requires that Montgomery County submit each year a fiscal analysis of the capital, operation, and maintenance expenditures necessary for compliance. The County proposes a budget of $12.9 million to comply with Permit requirements during FY06. From FY05 to FY06, the category with the greatest increase will be that for the Stormwater Maintenance Inspections and Facility Repairs. The percentage of the total budget increased from about 20% for FY05 to about 32% proposed for FY06. This reflects an increase in the number of structures being taken into the program and number of repairs being completed.

Assessment of Controls

The Permit requires the County to annually submit estimates of expected pollutant load reductions as a result of its proposed management programs. Due to a mapping discrepancy, acres shown with stormwater management decreased by approximately 10% from 2003 to 2004. Much of this apparently "lost" acreage was from redundant structures, either multiple on one site or in a series to one facility. New loads reductions will be calculated for the next annual report when more accurate drainage area information will be available. The most recent estimates showed that approximately 35.1% of all developed lands in the County had some form of stormwater management. There was an estimated 8.4% reduction in TN and a 16.9% reduction in TP loadings in runoff due to those controls.

Special Programmatic Conditions

EPA Audit

During September of 2004, the EPA Region III conducted an audit of the County's Permit Program. This involved three days of office interviews and field visits for sediment and erosion control, stormwater management facility maintenance, and the County's industrial facilities operations. The EPA audit found the County well along with implementation and noted examples of the County's having gone beyond the minimum requirements. There were two items identified as requiring additional action by the County: completing the mapping of storm drain outfall

drainage areas and adding compliance status at the County's Composting and Resource Recovery Facilities to the Permit's Annual Report.

Completion of the first item is underway but will not be finished by the end of this Permit period. The second item will be addressed in the next round of the Maryland municipal permits which will specify annual reporting for facilities covered under the General Permit for Industrial Facilities. The General Permit has no routine monitoring or reporting requirements. Both the Composting and Resource Recovery Facilities are covered under Individual NPDES permits which have specific monitoring requirements and quarterly reporting to MDE.

Next Permit Cycle

The County's existing permit is due for re-issuance in July 2006, although all current Permit requirements will stay in force until a new Permit is issued. As requested by MDE, the County has identified in this submission how it will meet requirements in the next Permit period. The County proposes to continue its current level of effort for source identification, discharge characterization, management programs, watershed restoration, and program funding. The County is considering changes to update and strengthen the sections of County Code that deal with stormwater management, erosion and sediment control, water quality enforcement, and the stormwater maintenance program. Any such changes would need to be reflected under the Permit's legal authority requirement. The County has requested a change in the pollutant loadings requirement for the Permit under Assessment of Controls to reduce frequency of reporting from annually to twice in the Permit period. Changes in controlled acreage from year to year are very small relative to the total acreage of developed land in the County and consequently, there is very little difference in the loadings calculated from one year to the next..

III. STANDARD PERMIT CONDITIONS

A. Permit Administration

An updated organization chart and contact information is shown in Table III-A1 and enclosed electronically on the CD in Attachment A. During 2004, there was a reorganization within the DEP. The enforcement and policy programs (including the Permit program) were consolidated within the Division of Environmental Policy and Compliance while all implementation programs (including the stormwater facility maintenance program) were moved within the Watershed Management Division.

Table III-A1. Organization Chart for Montgomery County Permit-Required Programs

Part III. Standard Permit Elements	**RESPONSIBLE PARTY**			
	Department	***Name***	***Title***	***Telephone***
A. Organization Chart	*DEP/DEPC*	Meosotis Curtis	*Senior Planning Specialist*	240-777-7711
B. Legal Authority	*OCA*	Walter Wilson	*Associate County Attorney*	240-777-6759
C. Source Identification				
GIS development and update	*DEP/DO*	Christopher Bingley	*Manager*	240-777-7721
GIS for storm drain system	*DPS*	Joe Cheung	*Manager*	240-777-6299
GIS for Stormwater Management Facilities	*DEP/WMD*	Daniel Harper	*Manager*	240-777-7709
Urban Best Management Practices Database	*DEP/WMD*	Daniel Harper	*Manager*	240-777-7709
D. Discharge Characterization				
Water Chemistry Monitoring	*DEP/DEPC*	Meosotis Curtis	*Senior Planning Specialist*	240-777-7711
Biological and Physical Habitat Monitoring	*DEP/WMD*	Keith Van Ness	*Senior Water Quality Specialist*	240-777-7726
Design Manual Criteria Evaluation	*DEP/WMD*	Keith Van Ness	*Senior Water Quality Specialist*	240-777-7726
	DPS	Leo Galanko	*Senior Permitting Services Specialist*	240-777-6242
E. Management Programs				
Stormwater Facility Inspections and Maintenance	*DEP/WMD*	Boyd Church	*Manager*	240-777-7760
Stormwater Management Permitting and Plan Review	*DPS*	Richard Brush	*Manager*	240-777-6343
Illicit Connection Detection and Elimination Program	*DEP/DEPC*	Steve Martin	*Field Program Manager*	240-777-7746
County Facility Stormwater Permit Compliance	*DPWT/DO*	Al Roshdieh	*Division Chief*	240-777-6008
Illegal Dumping and Spills	*DEP/DEPC*	Steve Martin	*Field Program Manager*	240-777-7746
Erosion and Sediment Control	*DPS*	Michael Reahl	*Manager*	240-777-6344
Watershed Outreach	*DEP/DEPC*	Diane Davis	*Planning Specialist III*	240-777-7714
General Environmental Outreach	*DEP/DO*	Joseph Keyser	*Environmental Education Coordinator*	240-777-7720

Table III-A1. Organization Chart for Montgomery County Permit-Required Programs				
Part III. Standard Permit Elements	**RESPONSIBLE PARTY**			
	Department	***Name***	***Title***	***Telephone***
Road and Roadside Maintenance Pollution Reduction Plan	*DPWT/DHS*	John DiGiovanni	*Field Services Section Chief*	240-777-7633
Pollution Reduction Plan and Compliance for County Government Departments	*DPWT/DO*	Al Roshdieh	*Division Chief*	240-777-6008
Pollution Prevention Program	*DEP/DEPC*	Ligia Moss	*Senior Engineer*	240-777-7756
F. Watershed Restoration				
Countywide Monitoring	*DEP/WMD*	Keith Van Ness	*Senior Water Quality Specialist*	240-777-7726
Assessments and Project Implementation	*DEP/WMD*	Daniel Harper	*Manager*	240-777-7709
G. Program Funding	*DEP/WMD*	Meosotis Curtis	*Senior Planning Specialist*	240-777-7711
H. Assessment of Controls	*DEP/DEPC*	Meosotis Curtis	*Senior Planning Specialist*	240-777-7711
Part IV. Special Programmatic Considerations	*DEP/DEPC*	Meosotis Curtis	*Senior Planning Specialist*	240-777-7711
Part V. Annual Reports	*DEP/DEPC*	Meosotis Curtis	*Senior Planning Specialist*	240-777-7711

DEPARTMENT ADDRESSES:

DEP/DEPC: *Department of Environmental Protection/ Division of Environmental Policy and Compliance*
255 Rockville Pike, Ste 120, Rockville MD 20850

DEP/DO: *Department of Environmental Protection/ Director's Office*
255 Rockville Pike, Ste 120, Rockville MD 20850

DEP/WMD: *Department of Environmental Protection//Watershed Management Division*
255 Rockville Pike, Ste 120, Rockville MD 20850

DPS: *Department of Permitting Services/Division of Land Development Services*
255 Rockville Pike, 2nd floor, Rockville MD 20850

DPWT/DHS: *Department of Public Works and Transportation/Division of Highway Services*
101 Orchard Ridge Dr. 2nd Flr. Gaithersburg MD 20878

DPWT/DO: *Department of Public Works and Transportation/Division of Operations*
101 Orchard Ridge Dr. 2nd Flr. Gaithersburg MD 20878

OCA: *Office of the County Attorney*
101 Monroe St. 3rd Floor, Rockville, MD 20850

B. Legal Authority

The MDE modified the County's permit effective January 26, 2004 to add six small localities as co-permittees for coverage under the Phase II of the NPDES MS4 Permit Program. The County is continuing its oversight, inspection, and enforcement authority over these five municipalities: the Towns of Chevy Chase, Kensington, Poolesville, and Somerset, and Chevy Chase Village; and one special tax district, the Village of Friendship Heights. An updated list of contacts for these six localities is shown in Table III-B1.

Table III-B1. List of Contacts for Co-permittees

Municipality	Contact Name and Title	Address	Telephone
Chevy Chase Village	Geoffrey Biddle, Manager	Village Hall 5906 Connecticut Avenue Chevy Chase, MD 20915	301-654-7300
Friendship Heights	Julian Mansfield, Village Manager	4433 South Park Avenue Chevy Chase, MD 20815	301-656-2797
Town of Chevy Chase	Todd Hoffman, Town Manager	4301 Willow Lane Chevy Chase, MD 20815	301-654-7144
Town of Kensington	Michael Wojton, Director of Public Works	3710 Mitchell St. Kensington, MD 20895	301-949-2424
Town of Poolesville	Wade Yost, Town Manager	P.O. Box 158 Poolesville, MD 20827	301-428-8927
Town of Somerset	Walter Behr, Mayor	4510 Cumberland Avenue Chevy Chase, MD 20815	301-654-1258

C. Source Identification

C1. Electronic Mapping

Base maps have been created and previously submitted to MDE for all required elements under this section. Updates are done routinely on most elements. The most significant outstanding piece is that of the electronic mapping and attribute database for the storm drain system and drainage areas to all major outfalls. The last comprehensive submission to MDE covered the publicly-owned storm drain systems for which plans were available as of October 1997. The DPS is responsible for completing the electronic inventory of all storm drain systems constructed since then and has been using the hard copy information from storm drain permit files to create electronic files.

The DPS has completed all private storm drain permits and created a "spatially merged" dataset which includes the electronic inventory previously submitted to MDE, all public storm drain permits, and about 70% of the private storm drain permits in the electronic inventory currently completed by DPS. "Spatially merged" means that all points and lines are in one map layer (or called feature dataset) but without attribute data. In the spatial data, there are additional fields (columns) that identify types of points or lines and the linkage to attribute tables. Attribute data are stored separately from spatial data in one database and are joined together in the map project file. The attributes for the previously submitted data are also separated from the DPS attribute data because the DPS selected a set of attributes for the new storm drain systems inventory that differs from that previously submitted. The DPS anticipates that review for the remaining 30% private storm drain permits will be completed and data merged by end of July.

The DPS has begun work on drainage area delineation. but have run into complications with the intent to scan permit file sheets and digitize from the scanned files. The DPS is coordinating with the DPWT to obtain the paper files of the County's CIP storm drain projects to begin the scanning. Table III-C1 shows the status of the DPS project as of May 2005.

Table III-C1. Summary by Storm Drain Permits and Features for Additions since October 1997.

Period	Public			Private			Capital Improvement Program		
	Permits	Points	Lines	Permits	Points	Lines	Permits	Points	Lines
Oct. to Dec. 1997	8	38	33	24	443	429	TBD	TBD	TBD
1998	82	710	671	79	TBD	TBD	TBD	TBD	TBD
1999	66	537	524	64	TBD	TBD	TBD	TBD	TBD
2000 Afterward	302	3799	3603	150	TBD	TBD	TBD	TBD	TBD
Total Completed	458	5084	4831	300	TBD	TBD	TBD	TBD	TBD
Total Estimated	450	4500	4000	325	4000	3500	50	500	500

Co-permittee Storm Drain System Inventory

The Towns of Kensington and Poolesville own and maintain their own storm drain systems. Table III-C2 compares the estimate from 2003 to number of miles of storm drain system that have now been electronically mapped within these Towns.

The Towns of Kensington and Poolesville have submitted the completed electronic mapping for their storm drain system. The GIS files for their submissions are included on CD in Attachment A.

Figure III-C1 shows the final mapped network for the Towns of Kensington and Poolesville. For the Town of Kensington, an element of the field mapping task was an evaluation of existing infrastructure condition. Those structures which were identified as "blocked" were listed as high priority for follow-up maintenance although there are no reported recurring flooding problems within the Town.

Table III-C2. Miles of Storm Drain Mapped by Co-permittees.

Municipality	Miles Mapped in 2003	Estimated Miles to Map in 2003	Actual Miles Mapped 2005
Town of Kensington	1.58	6.8	6.1
Town of Poolesville	7.0	7	17.4

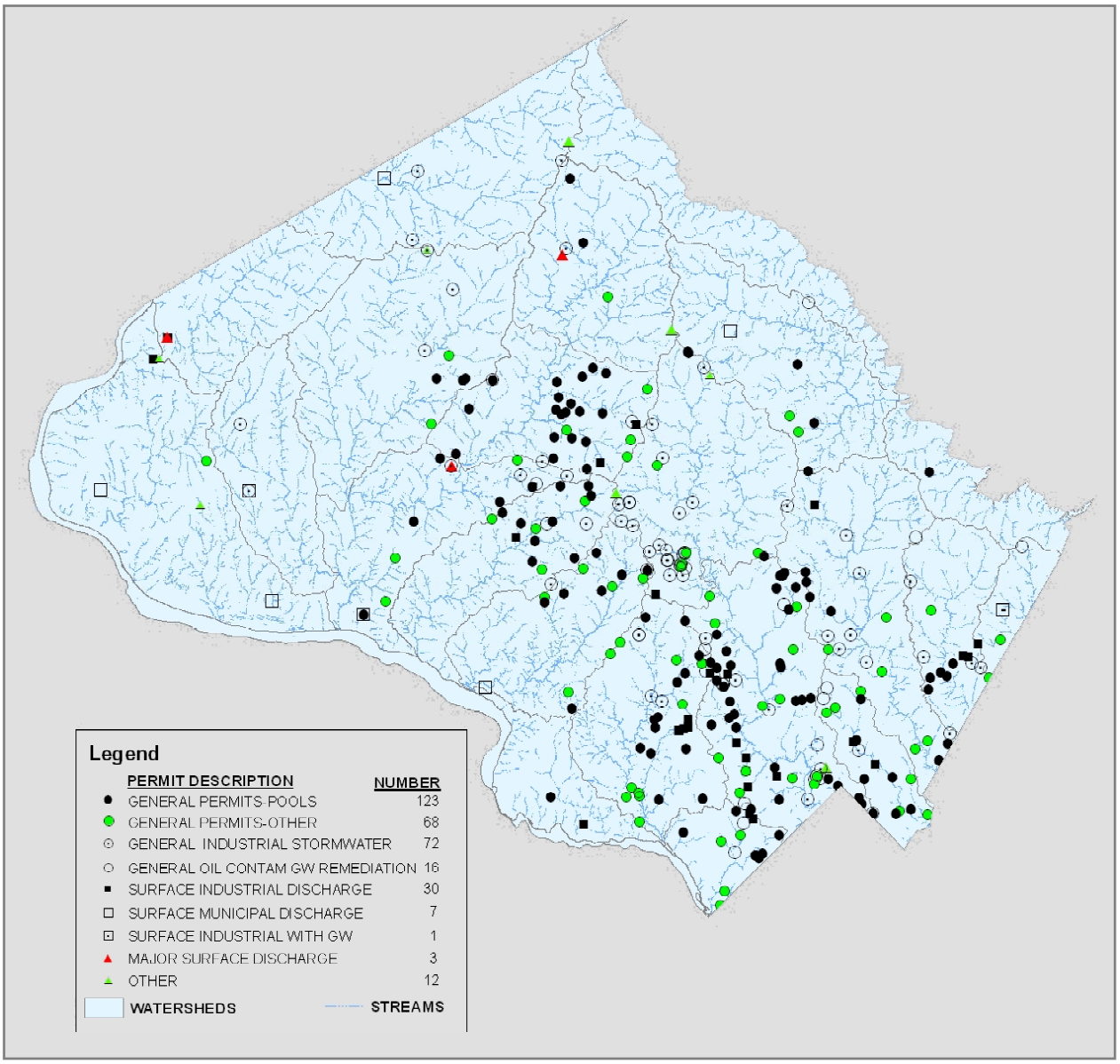
C2. Mapping of New Pollutant Sources

The DEP is continuing the development of the comprehensive database that will connect its environmental enforcement database and mapping information on permitted and other potential pollution sources. The sites with State water quality permits during 2004 are included in a spreadsheet on CD in Attachment A. Locations within the County are shown in Figure III-C2. According to the MDE database, there are 332 permitted facilities within the County. The category with the largest number (123) of permits issued was that for swimming pools and related activities.

There are four MS4 Permits in Montgomery County which are not directly represented on this figure but included in the "Other" category. These include the Montgomery County Individual Permit and General Permit coverage for the Cities of Gaithersburg, Rockville, and Takoma Park.

Figure III-C1. Town of Kensington Storm Drain Network

Figure III-C2. Locations of Facilities with MDE Water Management Administration Permits



C3. Urban Best Management Practices Database

The database included in electronic format on the CD in Attachment A uses the format required for the MDE's Urban BMP Database. There are 3,519 records in this database, shown by structure type in Table III-C3. The three structure types with the greatest number are Oil Grit Separator (797), Dry Pond Quantity Control Only (503), and Infiltration Trench Quality Control Only (418). There are approximately 2,022 unique sites represented with multiple facilities on one site sharing the same integer for structure number (STRU_NO) but different non-integer number (e.g. STRU_NOs 1002 and 1002.2 are on the same site). The multiple facilities may be in-series (for sequential treatment) or may be separately located around the site. There are 3,163 geospatial data points designating the control structure or other feature for the stormwater facilities in Montgomery County. There are 2,799 geospatial polygons for the drainage area of the stormwater facilities. There are more geospatial points than DA because some pretreatment and diversion devices have the same DA as the terminal facility and are not delineated.

The DEP has made significant efforts again this year to find information from existing paper files for all facilities constructed prior to the County's first Permit (1996), as well as to update our existing electronic records of stormwater facilities. This effort requires going through each record in the Microsoft Access database on the County's stormwater facilities, reviewing paper files kept by the Department of Permitting Services, and using geospatial analysis to correctly update the data. To date, this effort is approximately 50 percent finished and has resulted in the removal of over 200 records with inaccurate data from the Microsoft Access database. The DEP expects that at least 200 to 300 more facilities will be removed from the database over the next coming year. At the same time, the DEP is working on improving the geospatial DA and point location geodatabase. Due to the concurrent effort to improve both the Microsoft Access database and the geodatabase, the data between the two databases may not be identical at the time of the generation of the Urban BMP Database NPDES report. This effort is being conducted in anticipation of moving to a new data management system within the next few years and the DEP expects the data deficiencies to be resolved before the data is moved.

There are a few data fields with consistent missing data or data irregularities, including four required for the Urban BMP database.

Drainage Area (DA) -- There are structures still missing DA because the DA has not yet been calculated or the facility itself has not yet been confirmed through the inspections program. Furthermore, pretreatment and diversion devices will not have a separate DA as these facilities have identical DA's and are not delineated.

Built Date -- For many of the pre-1996 structures, built-date was not recorded on the existing paper files. The DEP is making an effort to add built-date for the facilities entered into the database after 1996.

Land Use -- The Maryland Department of Planning (MDP) land use classification included with the Urban BMP Database are based on the 2001 data layer provided by MDP. Due to the date of this data, some land uses in the database do not accurately reflect the updated land use conditions known by the County at the time of this submission.

Structure Type – The MDE structure type of other is frequently used by the DEP. An explanation of how DEP classifies structures with an MDE "other" structure type is included in general comments.

Table III-C3. Total Number of Stormwater Facilities by Structure Type Designation		
Structure Type	**Description**	**Total Number**
AQSW	Aquaswirl	5
BAYSAV	Baysaver	22
BR	Bioretention, quality control	40
BRQN	Bioretention, quantity control	1
BUFFER	Buffer, vegetative strip	1
CS	Control structure, underground only	10
FS	Flow splitter	243
INF	Infiltration trench quality control only	418
INFC	Infiltration trench and structural chamber system, quality control only	3
INFCQN	Infiltration trench and structural chamber, quantity and quality control	3
INFQN	Infiltration trench, quality and quantity control	55
INFUQN	Infiltration trench, quality and quantity buried, non-surface fed	3
INFU	Infiltration trench, quality control underground	33
INT	Interceptor	1
LS	Level spreader	36
PD	Pond	18
PDIB	Pond-infiltration basin, quality control only	18
PDIBED	Pond-infiltration basin with extended detention	3
PDIBQN	Pond-infiltration basin, quantity control only	28
PDIBQNED	Pond-infiltration basin with quantity control and extended detention	7
PDQN	Pond, quantity control only	503
PDQNED	Pond with quantity control and extended detention	51
PDQNSF	Pond-dry, quantity control with sand filter base	46
PDWD	Pond-wetland only	9
PDWDED	Pond-wetland and extended detention	12
PDWDQN	Pond-wetland, quantity control only	37
PDWDQNED	Pond-wetland with quantity control and extended detention	36
PDWT	Pond-wet, quality control only	47
PDWTED	Pond-wet with extended detention	8
PDWTQN	Pond-wet, quantity control only	116
PDWTQNED	Pond-wet with quantity control and extended detention	53
PP	Plunge pool	11
PSF	Peat sand filter	1
SEP	Oil-Grit separator	797
SEPSF	Oil-Grit separator and sand filter	80
SF	Sand filter	198
SFQN	Sand filter, quantity control only	25
SFU	Sand filter, underground	18
SP	Stone pit	1
STC	Stormceptor	204
STFIL	Stormfilter	16
UG	Underground detention	286
UGC	Underground chamber system, quantity control only	1
UGINF	Underground storage with a stone bottom infiltration	4
VP	Vegetated pool	6
VS	Vegetated swale	5
	Total Number of all types	3,519

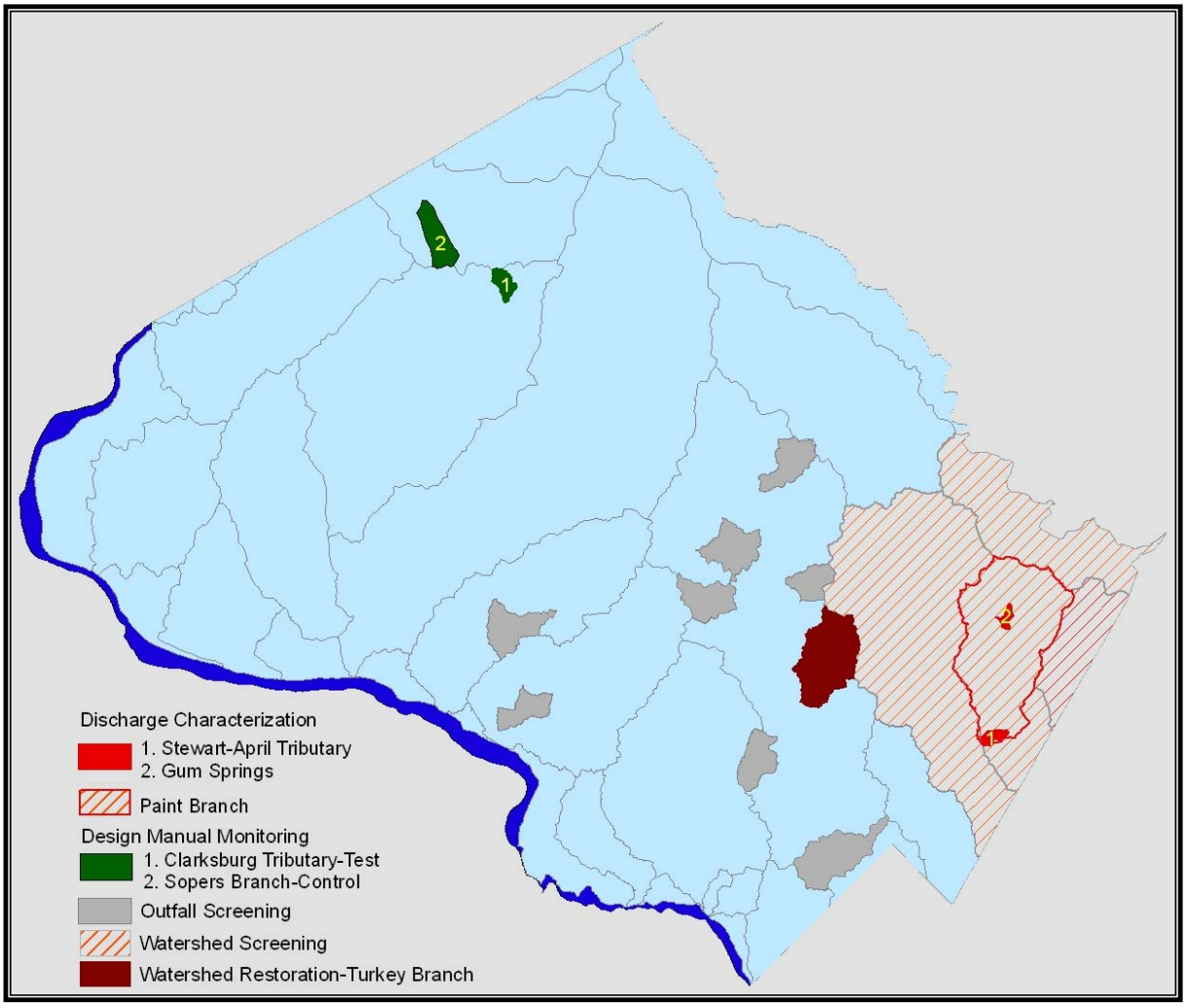
D. Discharge Characterization

The permit requires that "Montgomery County shall contribute to Maryland's understanding of stormwater runoff and its effect on water resources by conducting a monitoring program." The locations of the County stations and watersheds in which Permit-required monitoring took place during the year 2004 are shown in Figure III-D1.

D1. Long Term Discharge Characterization during 2004

During 2002, the County began its paired outfall and instream monitoring in the Stewart-April Lane Tributary and Paint Branch Mainstem. Continuous flow readings are being recorded at the outfall and instream sites. The DEP is maintaining continuous flow monitoring on the mainstem of the Upper Good Hope for a long-term record of flow pattern or volume changes. The permit-required tipping bucket rain gauge is located at the Washington Suburban Sanitary Commission (WSSC) Laboratory Facility, only about a mile directly north of the lower Paint Branch monitoring stations. The WSSC is providing laboratory analytical services for all County monitoring programs.

Figure III-D1. Stations and Watersheds for Permit Required Monitoring during 2004.



The County conducted biological, physical, and water chemistry monitoring for one outfall and one mainstem station in the Lower Paint Branch. The locations and contributing drainage areas of the outfall station (PBPB104) and instream station (PBPB310A), and upstream station PBPB309B are shown on Figure III-D2. Drainage area characteristics are shown in Table III-D1.

Figure III-D2. Outfall and Instream Monitoring Stations

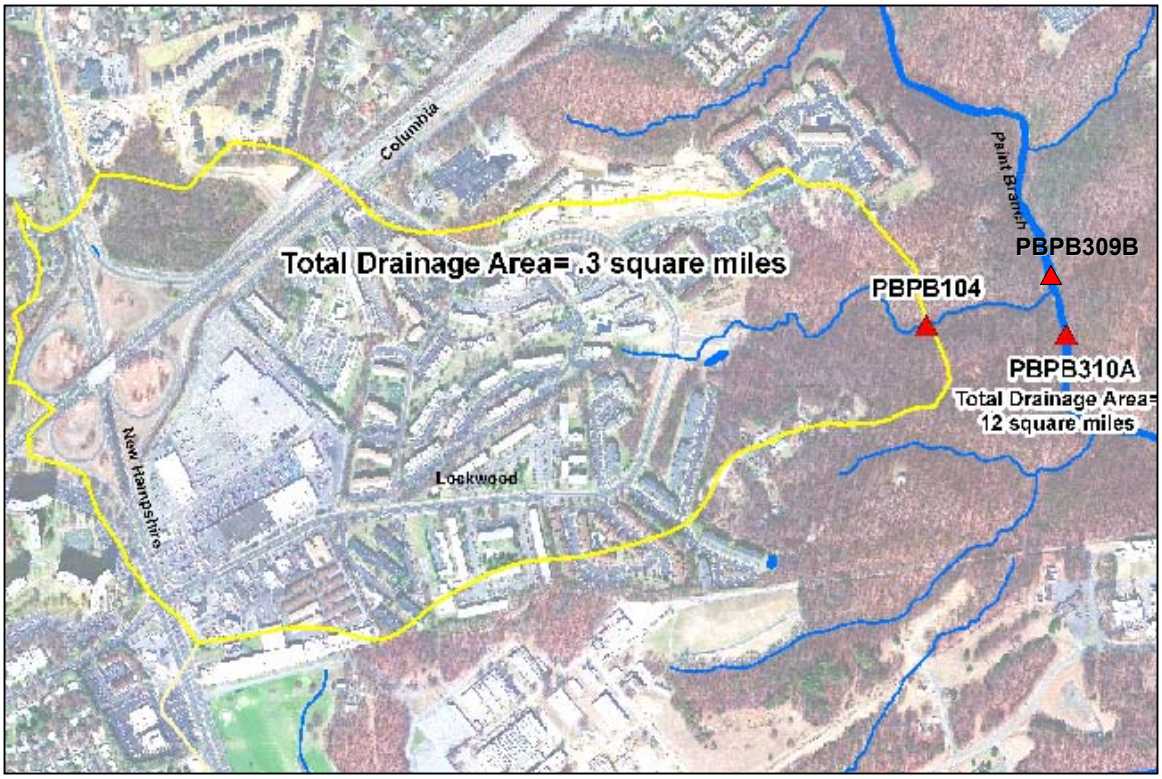


Table III-D1. Drainage Area Characteristics for Water Chemistry Stations in the Lower Paint Branch Watershed.

Drainage Area Characteristics	PERCENT				Total Acres	Stream miles
	Impervious	Woods	Cropland	Lawn/ Open Land		
Outfall (PBPB104): Stewart-April Lane Tributary	38.7	21.3	0	40.0	223.4	0.6
Instream (PBPB310A): Paint Branch Mainstem	13.0	26.6	3.4	57.0	7,734.0	31.5

Water Chemistry Parameters

Table III-D2 lists the parameters, methods, and method detection limits for water chemistry analyses. The first samples for long-term discharge characterization in the Stewart-April Lane Tributary (outfall) and in Lower Paint Branch mainstem (instream) were taken in May 2002. Flow monitoring, baseflow, and storm event water chemistry data collected during 2002-2004 for the outfall and instream stations are included in the electronic database submitted on the CD in Attachment A.

Continuous flow readings are being recorded at both the outfall and instream sites. The tipping bucket rain gauge is located at the WSSC Laboratory Facility in Silver Spring, only about a mile directly north of the monitoring stations. The WSSC is providing laboratory analytical services for all County monitoring programs.

Table III-D2. Water Chemistry Parameters for Discharge Characterization

Parameter	WSSC*method	WSSC MDL
Fecal Coliform	SM9221 B	1.1/100 mL
Biochemical Oxygen Demand 5 Day	SM 5210 B	1.0 mg/L*
Hardness	SM2340 C	1.0 mg/L*
Nitrate+Nitrite	L10-107-04-1-A	0.015 mg/L
Total Kjeldahl Nitrogen	L10-107-06-2-D	0.08 mg/L
Total Petroleum Hydrocarbons	EPA 1664A	5.0 mg/L
Total Phenols	EPA 420.1	<0.01 mg/L
Total Phosphorus	L10-115-01-1-E	0.021 mg/L
Total Suspended Solids	SM 2540 D	1.0 mg/L
Total Cadmium	EPA 200.8	0.6 µg/L
Total Copper	EPA 200.8	1.2 µg/L
Total Lead	EPA 200.8	0.4 µg/L
Total Zinc	EPA 200.8	3.4 µg/L

* Most currently available, SM=Standard Methods, L=Lachate Instrument Methods, and EPA=Environmental Protection Agency

WSSC=Washington Suburban Sanitary Commission
MDL= Method Detection Limit

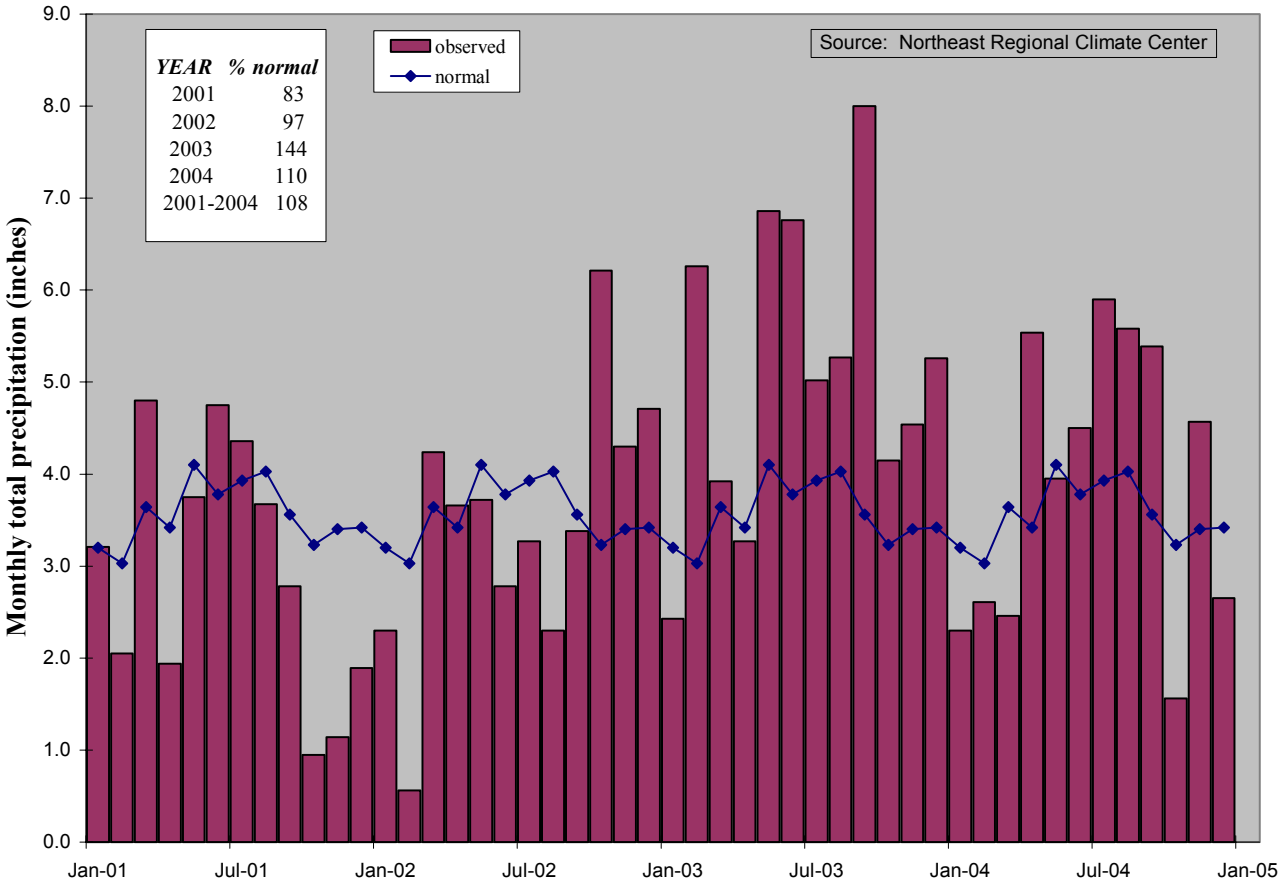
Rainfall and Runoff

Precipitation patterns in Maryland during 2001 through 2004 differed markedly from year to year and from season to season as shown in Figure III-D3. The monitoring period began with two below normal rainfall years in 2001 and 2002 with an extended drought from spring 2001 to October 2002, resulting in the lowest flows on record in the Potomac River and other area waterways. In contrast, the record high precipitation during 2003 produced record high flows in these same water bodies. Spring and summer rainfall during 2004 was also well above normal. Average annual precipitation over this four-year period was about 8% above normal.

Hydrology Modeling

The permit requires that a model be conducted to evaluate rainfall to runoff characteristics of the contributing watershed. The U.S. Army Corps of Engineers (USACE) is responsible for the development of the hydrology model for existing and post-retrofit construction runoff characteristics at the Stewart-April Lane Tributary. There has been a significant change since the first proposed retrofit design. The now proposed facility will provide extended detention 12-hour control for a 24-hour rainfall event of 1.35". All modeling data and documentation has been submitted to MDE as part of the required Water Quality Certification process.

Figure III-D3. Monthly Total Precipitation (inches) average across Maryland 2001-2004.



Monitored Storm Events

Table III-D3 shows storm events sampled during 2002-2004 for the Permit-required monitoring. All seasons except winter are well-represented over this 30 month period. During the month of January, melting snowfall created difficulties in determining "start" of storm events from immediately-preceding rain. The event on December 11, 2003, with 1.26" of rain in 15.08 hours produced the greatest total stormflow instream but not in the tributary. The greatest total stormflow from the outfall occurred after the President's Day Blizzard in February, 2003 which produced a record 27" of snowfall. Total stormflow at the instream stations is not available for that event due to equipment failure during the falling limb of the storm.

Table III-D3. Storm Events Sampled During 2002-2004

Date	Rainfall Depth (inches)	Rainfall Duration (hours)	Instream Stormflow Duration (hours)	Event Return Frequency	Total Stormflow (cubic feet)	
					INSTREAM	OUTFALL
5/3/2002	0.83	6.25	48.00	1 month	6,279,329	296,505
6/28/2002	0.38	0.50	22.00	< 1month	506,040	Not available
8/30/2002	2.34	23.75	63.00	6 month	5,984,389	816,405
10/12/2002	1.75	32.50	79.00	3 month	5,563,221	747,285
10/29/2002	1.19	34.00	65.00	1 month	4,832,772	574,563
12/12/2002	0.65	20.50	55.00	1 month	13,041,860	921,972
2/23/2003	2.51	32.50	32.00	6 month	Not available	1,778,892
3/21/2003	1.74	15.25	53.00	3 month	17,763,490	1,077,124
5/16/2003	1.93	21.25	36.25	6 month	13,224,000	926,967
6/8/2003	1.85	10.25	31.50	6 month	15,035,120	847,965
6/19/2003	0.43	5.25	18.50	< 1 month	6,464,931	170,515
7/3/2003	0.82	13.50	56.00	1 month	5,695,077	286,059
9/13/2003	1.35	24.67	52.00	3 month	6,942,708	334,023
9/23/2003	2.54	11.58	65.00	1 year	16,678,010	738,276
10/15/2003	1.38	12.58	67.00	3 month	9,340,343	441,870
11/20/2003	1.76	8.75	84.00	3 month	16,436,990	632,814
12/11/2003	1.26	15.08	66.00	3 month	20,380,500	514,425
3/6/2004	1.05	25.20	41.00	2 month	56,775,392	3,884,499
3/31/2004	1.15	22.25	33.00	3 month	52,597,103	1,376,745
4/12/2004	1.25	22.50	96.00	3 month	95,384,846	5,363,353
5/21/2004	0.36	16.50	23.50	1 month	4,905,298	435,097
6/4/2004	0.84	31.00	77.67	1 month	29,501,850	2,786,052
8/14/2004	0.78	12.58	31.00	1 month	43,216,275	692,008
9/8/2004	0.45	16.50	39.00	< 1 month	25,686,636	446,542
11/12/2004	1.68	22.00	75.00	6 month	141,967,160	6,908,813
12/9/2004	0.56	7.50	20.00	1 month	61,370,313	2,438,791

Water Chemistry Monitoring

In the annual report for 2003, seasonal values for storm events at the Stewart-April Lane tributary and in the Upper Good Hope mainstem were compared for the period 1998-1999. Total nitrogen (TN), Total Phosphorus (TP), Total Suspended Solids (TSS), and heavy metals concentrations were compared.

TN, the sum of Total Kjeldahl Nitrogen and Nitrate+Nitrite, tended to be much higher during storm events in the Stewart-April Lane Tributary than in the Upper Good Hope Mainstem. This was unexpected based on contributing land uses. Other studies have shown higher nitrogen in runoff from drainage dominated by low density residential than from drainage with high percentage of impervious area.

An examination of baseflow conditions, shown in Figure III-D4, shows a possible reason-differences in groundwater contribution. The red markers represent TN while the blue markers represent TP during baseflow conditions at the Stewart-April Lane Tributary compared to the Upper Good Hope mainstem station for 1988 and 1989. There was no monitoring done in the Lower Paint Branch mainstem during this period. The lowest concentrations were shown in the summer months, when root activity is highest and groundwater levels are receded. Levels increase during the fall as biological uptake decreases. Some possible surface dilutions was shown during the winter and spring months with lower instream concentrations.

Figure III-D4. Total Nitrogen (TN) and Total Phosphorus (TP) in Stewart-April Lane (Stew-Apr) and the Upper Good Hope mainstem (GH). Baseflow seasonal values for 1998-1999.

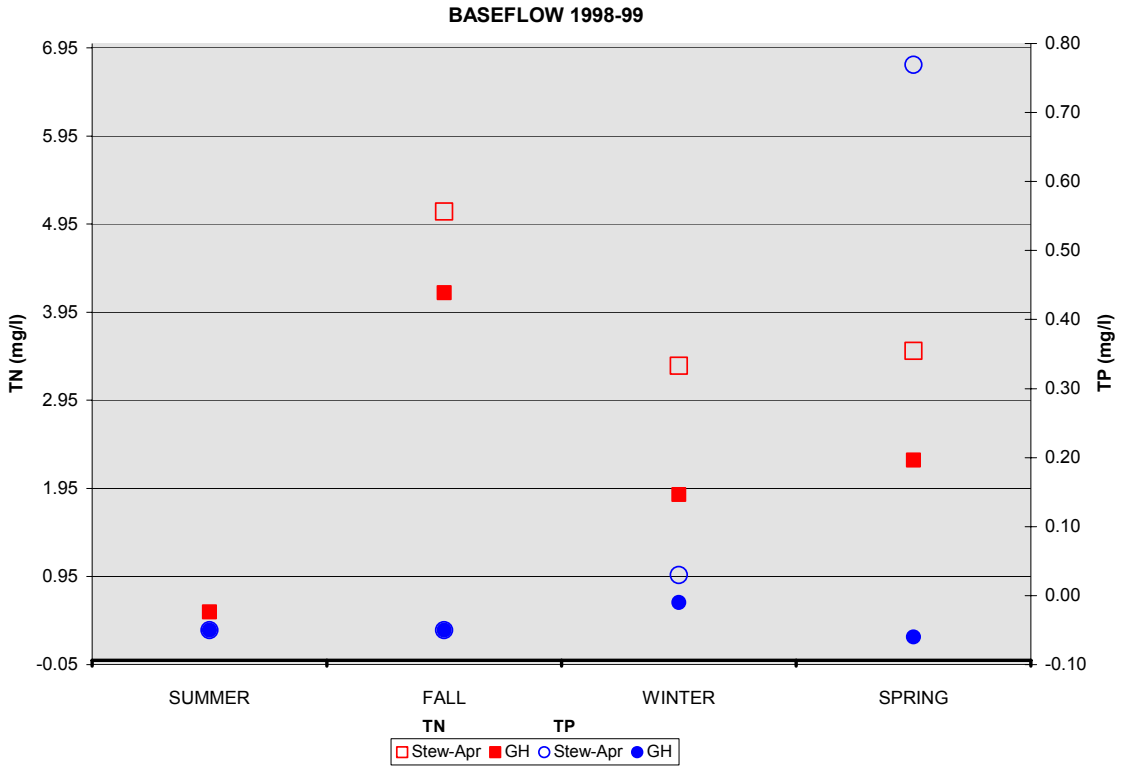
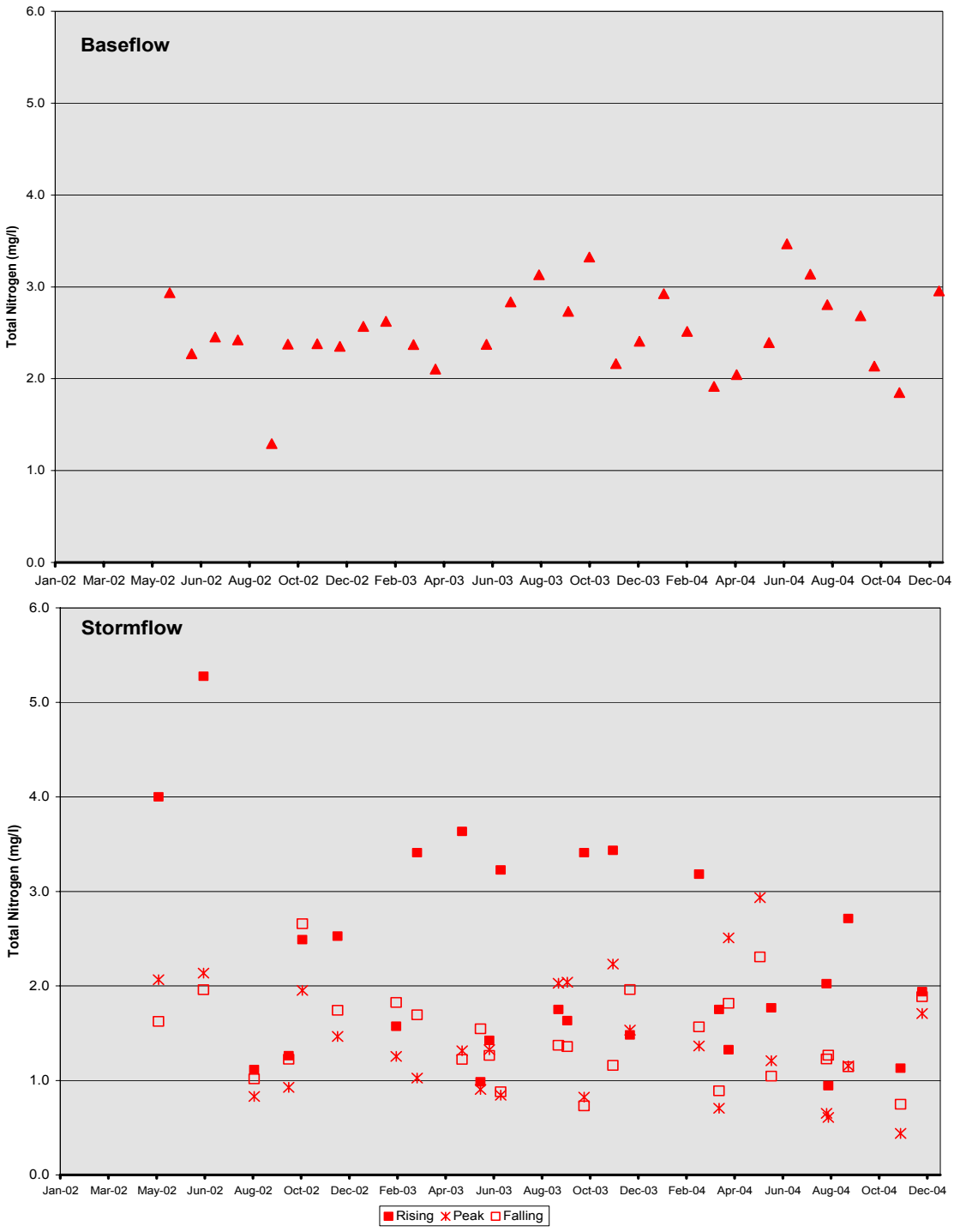


Figure II-D5 compares TN in the Stewart-April Lane Tributary during the current Permit period for baseflow and for each limb of the hydrograph. The highest concentrations were observed during baseflow and on the rising limb. All baseflow values were greater than 1 mg/l, a minimum level used as indicating anthropogenic sources (EPA, 1999). Lower values during the peak and falling limbs represent a dilution by runoff. Controlling nitrogen from this tributary will require baseflow not just stormwater controls.

Figure III-D5. Total Nitrogen (mg/l) in the Stewart-April Lane Tributary. 2002-2004



The pattern for TP concentrations shown in Figure III-D6 were opposite that for TN, with lower values during baseflow. This is the same pattern observed for TSS in Figure III-D7. Phosphorus tends to be associated with particles, so that controls for solids would produce associated reductions for phosphorus in runoff.

Figure III-D6. Total Phosphorus (mg/l) in the Stewart-April Lane Tributary. 2002-2004

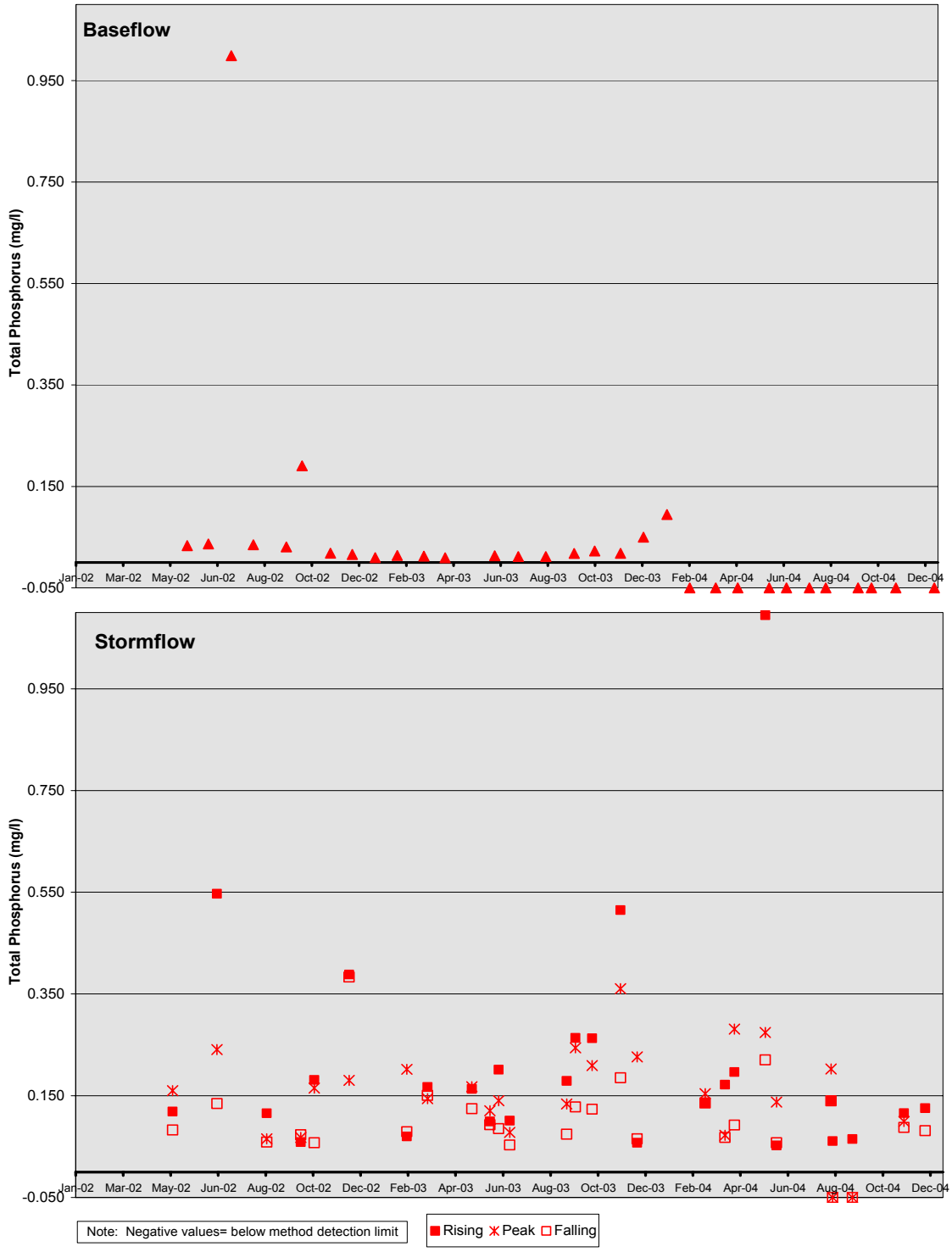
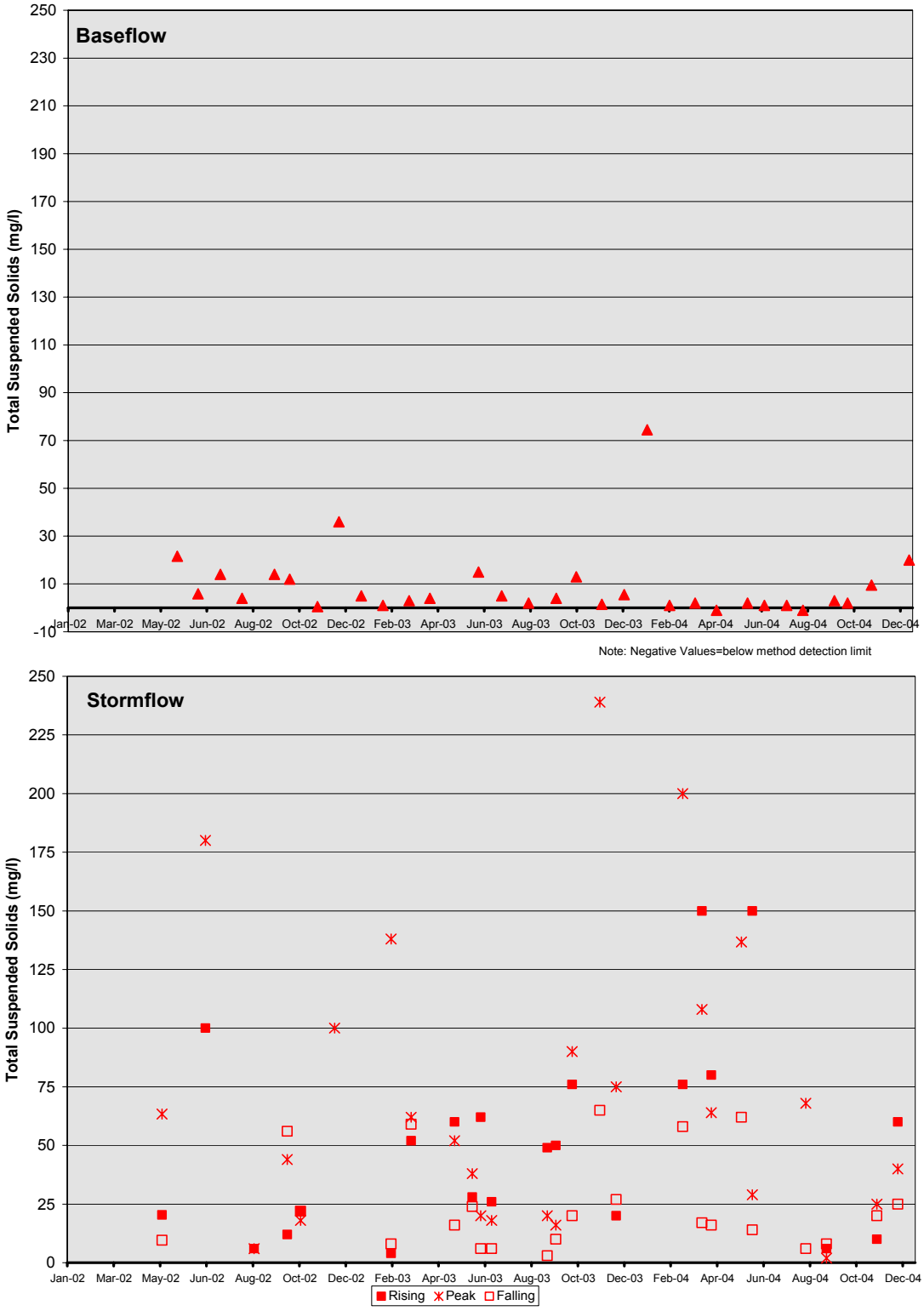


Figure III-D7. Total Suspended Solids (mg/l) in the Stewart-April Lane Tributary. 2002-2004



In the Annual Report for 2003, the concentrations for Total Copper and Total Zinc during storm events were shown as much higher at Stewart-April Lane from 1989-99 than at the other two stations. All three of these compounds are toxic to aquatic organisms. Their presence in measurable amounts in stormwater worsen the adverse impacts of uncontrolled stormwater runoff on the Stewart-April Lane Tributary. The large amount of residential and commercial parking areas in the contributing drainage were implicated as potential sources of these pollutants.

For the current monitoring period, the heavy metals values were consistently higher during stormflow than baseflow. This is shown in Figure II-D8 and Figure II-D9. The difference was more noticeable for Total Zinc than Total Copper. Both metals showed cyclical nature in their concentrations although this pattern did not appear to be directly related to season. This pattern will be investigated further in subsequent reports

Figure III-D8. Total Copper (mg/l) in the Stewart-April Lane Tributary. 2002-2004.

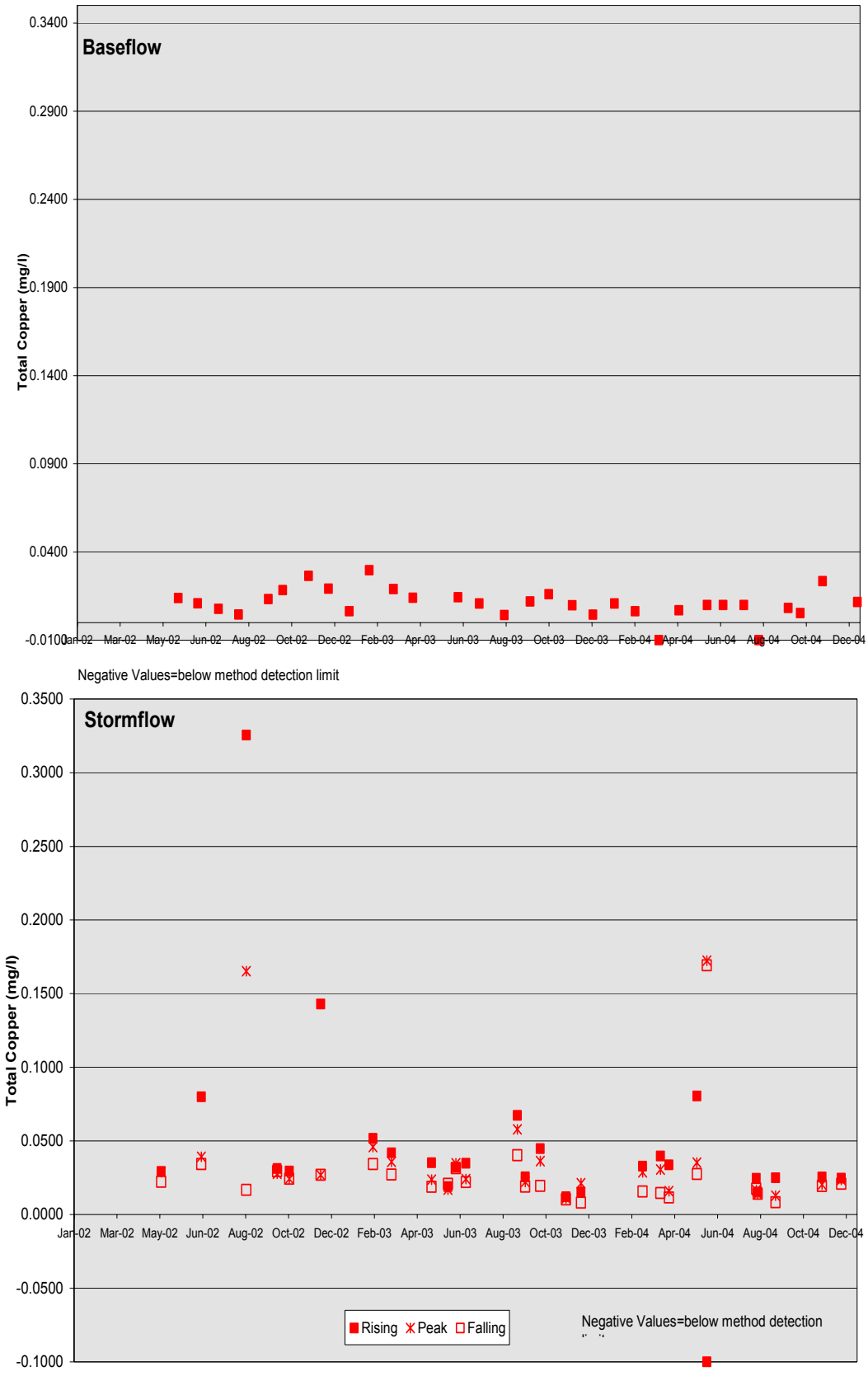
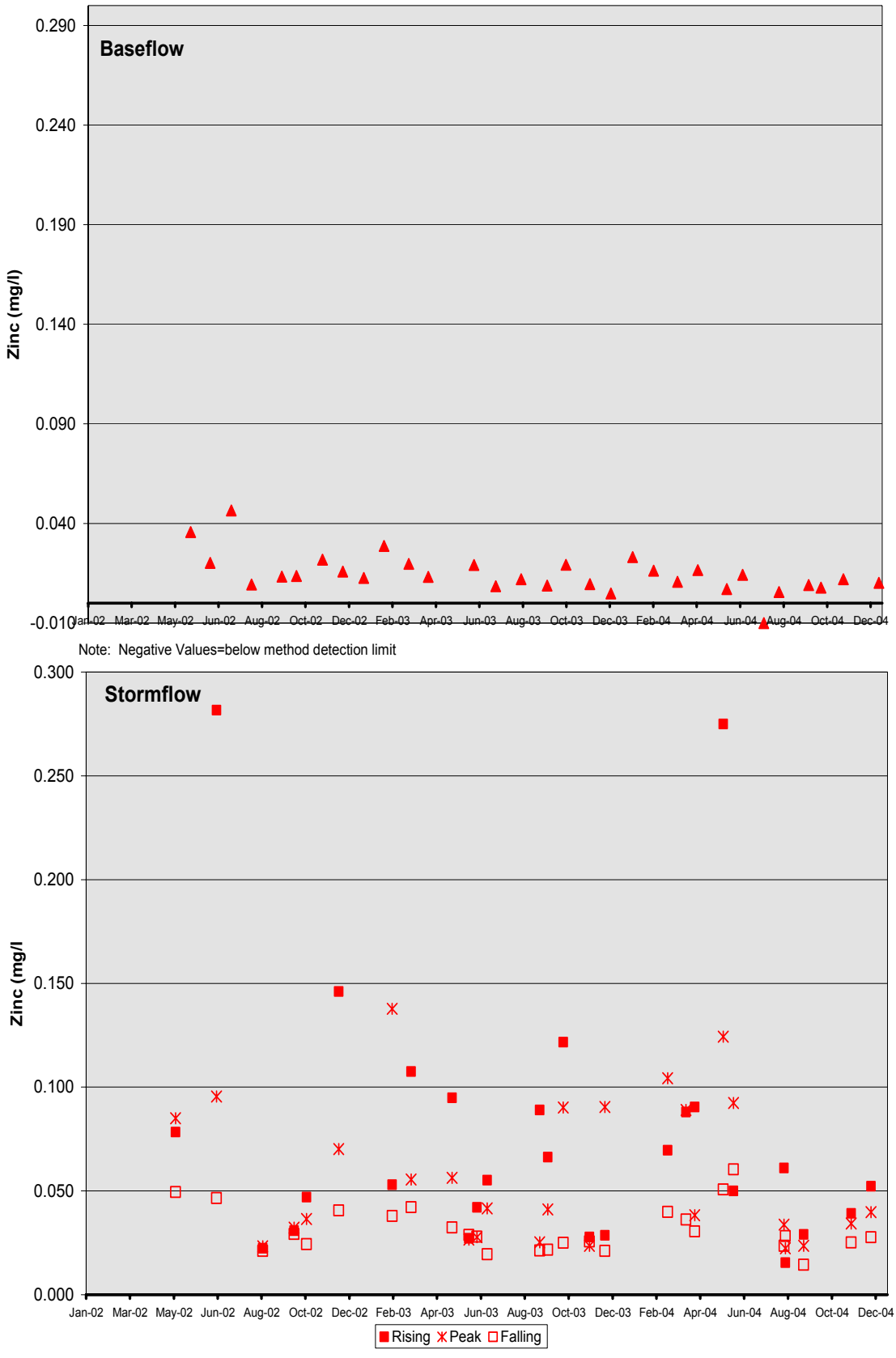


Figure III-D9. Total Zinc (mg/l) in the Stewart-April Lane Tributary. 2002-2004



Biological and Habitat Monitoring

Pre-construction Period

To date, DEP has five years of pre-construction data at the Stewart-April Lane tributary station (PBPB104) and three years of data at mainstem lower Paint Branch stations PBPB309B (upstream of the tributary) and PBPB310A (downstream of the tributary). As shown in Table III-D4, this includes fish data for 1995 and benthic macroinvertebrate data for 1996 for PBPB104, and fish and benthic macroinvertebrate data for 2001, 2002, 2003, and 2004 for all three stations. Detailed analysis is deferred until after retrofit construction is complete.

Table III-D4. Biological Results for Discharge Characterization.

YEAR (Pre-Construction)	PBPB104 Tributary		PBPB309B Upstream		PBPB310A Downstream	
	Fish	Benthic	Fish	Benthic	Fish	Benthic
1995	X					
1996		X				
2001		X				
2002	X	X	X	X	X	X
2003	No fish	X	X	X	X	X
2004	No Fish	X	X	X	X	X

Table III-D5 shows the rapid habitat assessment parameters that scored less than good at each station. The rapid habitat assessment rated overall "Good" at all three sites, although conditions in the tributary were on the lower end of that category. Figure III-D10 is a graphical comparison of the habitat ratings with those for the biological community for the 2004 sampling. The benthic macroinvertebrate community was poor for all three sites. While the fish community was good for both PBPB309B and PBPB310A, there were no fish caught in PBPB104 and a resulting poor rating.

Table III-D5. Rapid Habitat Assessment Parameters with Low Scores for Discharge Characterization.

PBPB104	**Stewart April Lane Tributary** Bank Stability (scored 3 out of 10) Bank Vegetation (scored 7 out of 20)
PBPB309B	**Paint Branch mainstem, upstream of PBPB104 confluence** Instream Cover (scored 8 out of 20) Embeddedness (scored 7 out of 20) Bank Vegetation (Scored 5 out of 20)
PBPB310A	**Paint Branch mainstem, downstream of PBPB104 confluence** Sediment Deposition (scored 10 out of 20) Right Bank Stability (scored 2 of 10)

Figure III-D10. Long Term Discharge Characterization. Biology and Habitat Conditions. Line shows expected direct correspondence between biological and habitat conditions.

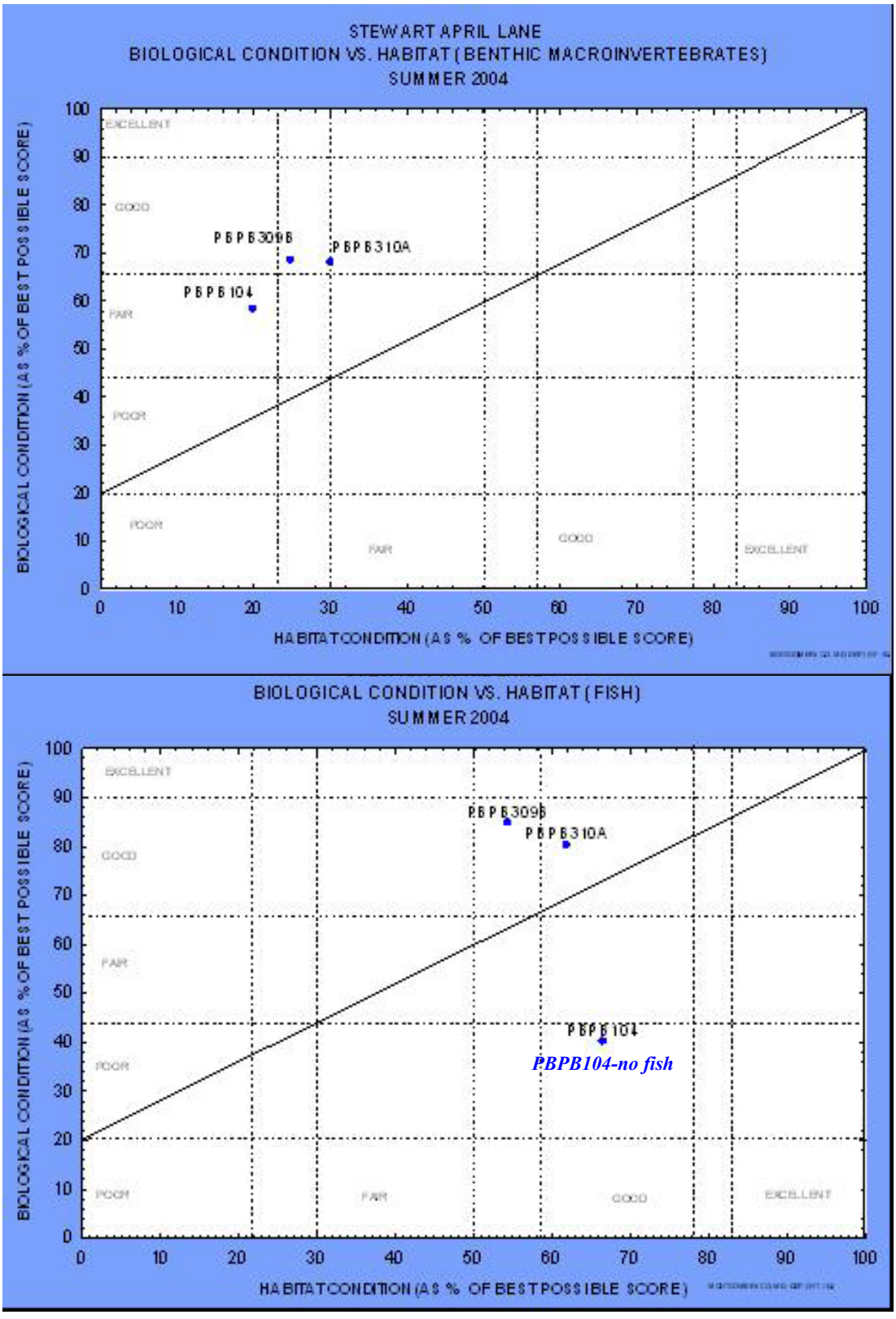


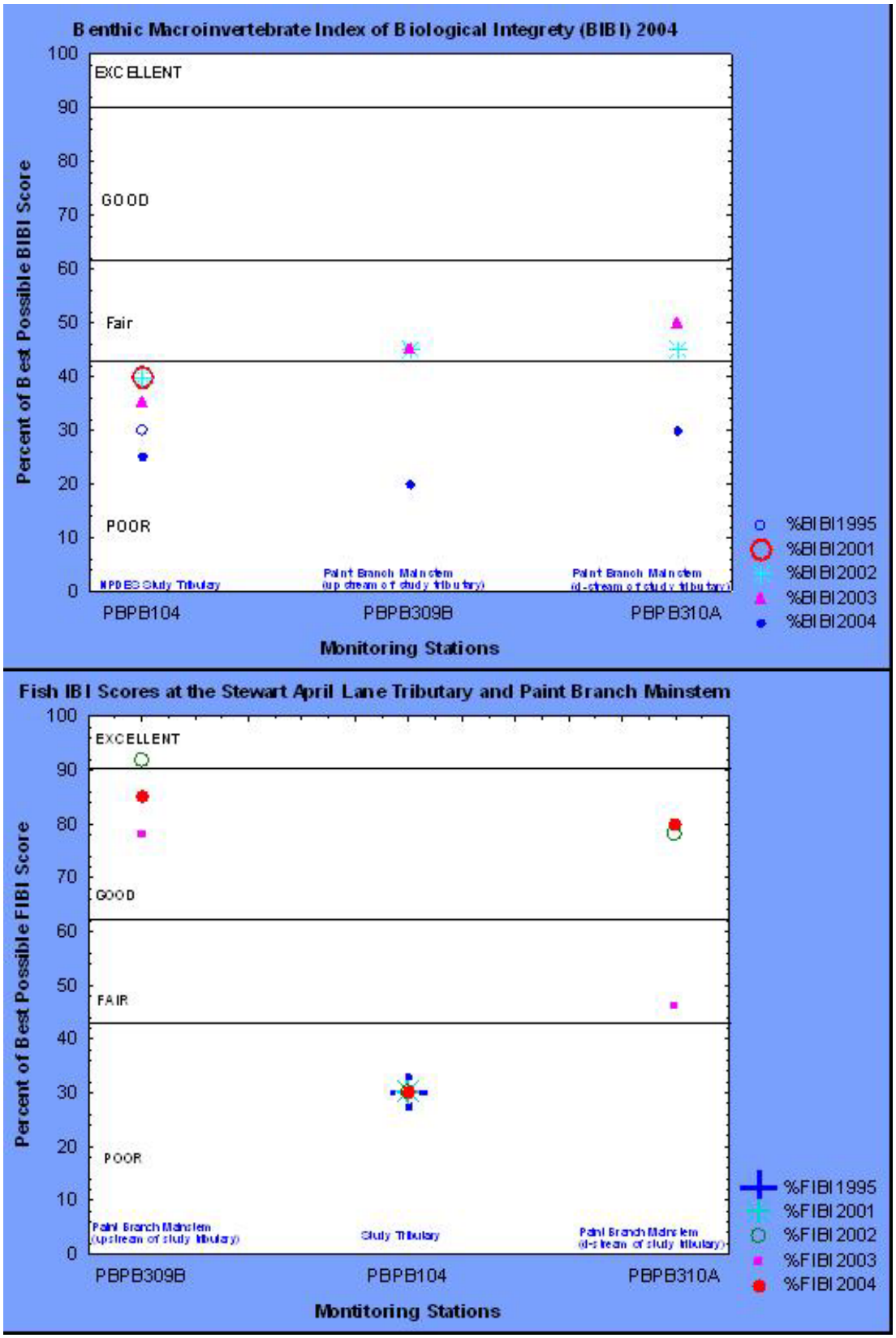
Table III-D6 shows results from the water chemistry and physical parameters monitored at the time of the biological sample collections. The conductivity values during the spring and fall in the Stewart-April Lane Tributary were higher than at the mainstem stations. The mainstem site PBPB310A showed some dissolved oxygen depletion in the summer with 69% saturation during, compared to a desired >80% saturation.

As shown in Figure III-D11, all three stations were Poor for the benthic macroinvertebrate community. This is a decline for mainstem stations from years past. The fish community rating improved for station PBPB310A from 2003 to 2004, going from a fair to good. The other two sites remained the same, PBPB309B rated good and PBPB104 had no fish caught resulting in a poor rating.

Table III-D6. Water Quality Measurements at Biological Stations 2004

STATION BY SAMPLE TYPE AND DATE							
PARAMETER	**Acceptable Range**	**PBPB104 (tributary)**		**PBPB309B (upstream)**		**PBPB310A (downstream)**	
		Benthic 3/24/2004	Fish 7/16/2004	Benthic 3/24/2004	Fish 7/16/2004	Benthic 3/24/2004	Fish 7/16/2004
Dissolved Oxygen (mg/l)	> 5	11.91	12.87	11.79	6.91	11.78	6.29
% Dissolved Oxygen Saturation	close to 100%	105	141	96	81.1	94	69
PH	6.5-8.5	7.25	7.78	7.05	7.5	6.98	7.55
Conductivity (umhos)	<= 300	545	441	281	137	302	100
Air Temperature (deg C)	not applicable	17	22	14	25	5.8	19.6
Water Temperature (deg C)		10.5	19.6	25	19.9	10	15.6

Figure III-D11. Long-Term Discharge Characterization
Comparison of Biological Community Scores



Benthic Community Structure and Function Differences

Eight measurements of community structure and function make up the DEP's Benthic Index of Biological Integrity (BIBI). These include functional feeding groups (FFGs), taxa richness, diversity, composition, and pollution tolerance. Each measurement responds in a predictable way to increasing levels of stressors. Examining the details of the benthic communities provides more information on possible impairing factors than available just from the BIBI score.

Functional Feeding Groups

The FFG classifications are ecological classifications that distinguish benthic macroinvertebrates based on how they process food (Camann, 2003 and Cummins in Loeb and Spacie, 1994). The five FFGs usually examined in a bioassessment are collector gatherers, filtering collectors, shredders, scrapers, and predators. Collectors are the most generalized and usually most abundant FFG because their food source of fine particulate organic matter is abundant. Shredders reduce coarse material (like leaves) into fine material which can then be transported downstream for use by collectors. Shredders actually use the fungi and bacteria present on leaf surfaces for food, breaking the leaf into smaller fragments in this process. Other FFGs include scrapers and predators. Scrapers scrape and graze on the diatoms and on other algae that grow attached on exposed surfaces. Predators attack and consume other insects and macroinvertebrates

The FFGs in the Stewart-April Lane tributary (PBPB104) are compared to those in Gum Springs (PBGS111) for 2003 and 2004 in Figure III-D12. The Gum Springs station is in a first order stream in the Upper Paint Branch, and with significantly less contributing impervious area than in the Stewart-April Lane tributary (less than 15% versus about 39%). The BIBI ranking in the Gum Springs has been consistently in the good range since it was first monitored.

In 2004, the benthic community at PBPB104 was comprised of about 93% collectors, 4% shredders, 2% predators, and about 1% combined filterers and scrapers. In contrast, the community at PBGS111 was composed of 50% collectors, 2% shredders, almost 1% scrapers, and about 45% filterers and 2% predators. The dominant FFGs in first order headwater streams are typically shredders and collectors. This was true for the degraded Stewart-April Lane tributary in both years but not the high quality Gum Springs stations where filterers were the dominant functional feeding groups in both years, although less so in 2004. The difference in ratio of collectors to shredders could reflect a greater abundance of particulate organic matter in the Gum Springs tributary or some non-food related limiting factor that differentially affects collectors or shredders in the Stewart-April Lane tributary.

The FFGs diversity at the Paint Branch mainstem stations (PBPB309A and PBPB310B) is shown in Figure III-D13 for both 2003 and 2004. The FFGs composition were as expected for this size stream with collectors the dominant category in both years. Collectors and scrapers are the expected dominant FFGs in higher order streams. At this point within a typical stream system, type of food available would have shifted and attached algae would be more abundant. The collectors represented a larger proportion of the benthic community (greater than 75%) than in the first-order streams, presumably because of the abundant fine particulate organic material being transported from upstream sources.

Figure III-D12. Comparison for 2003 and 2004 by percent functional feeding groups in two first order Paint Branch streams. ***Stewart April Lane Tributary: 39% impervious, Benthic Index of Biological Integrity poor. Gum Springs Tributary: less than 15% impervious, Benthic Index of Biological Integrity good.***

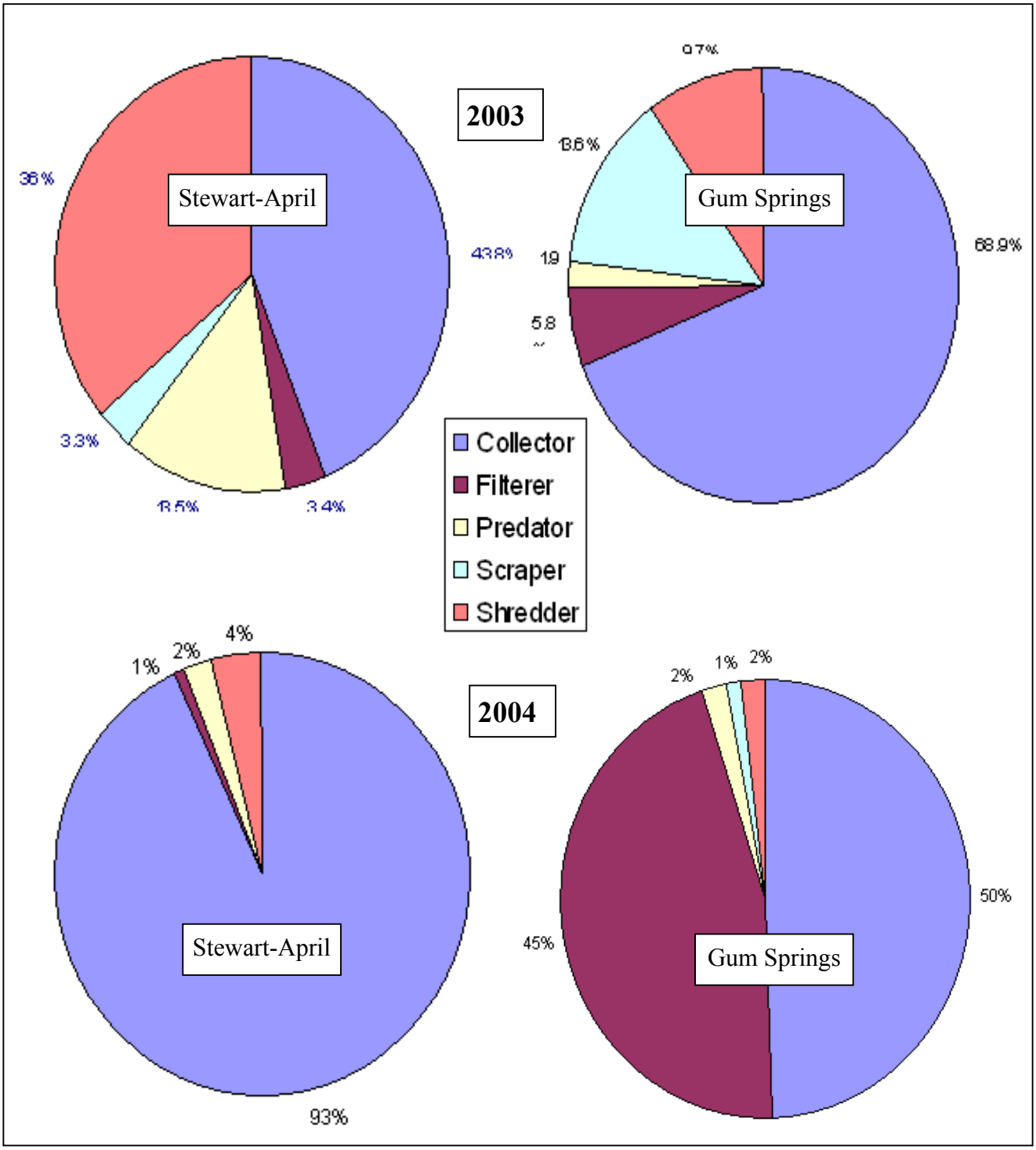
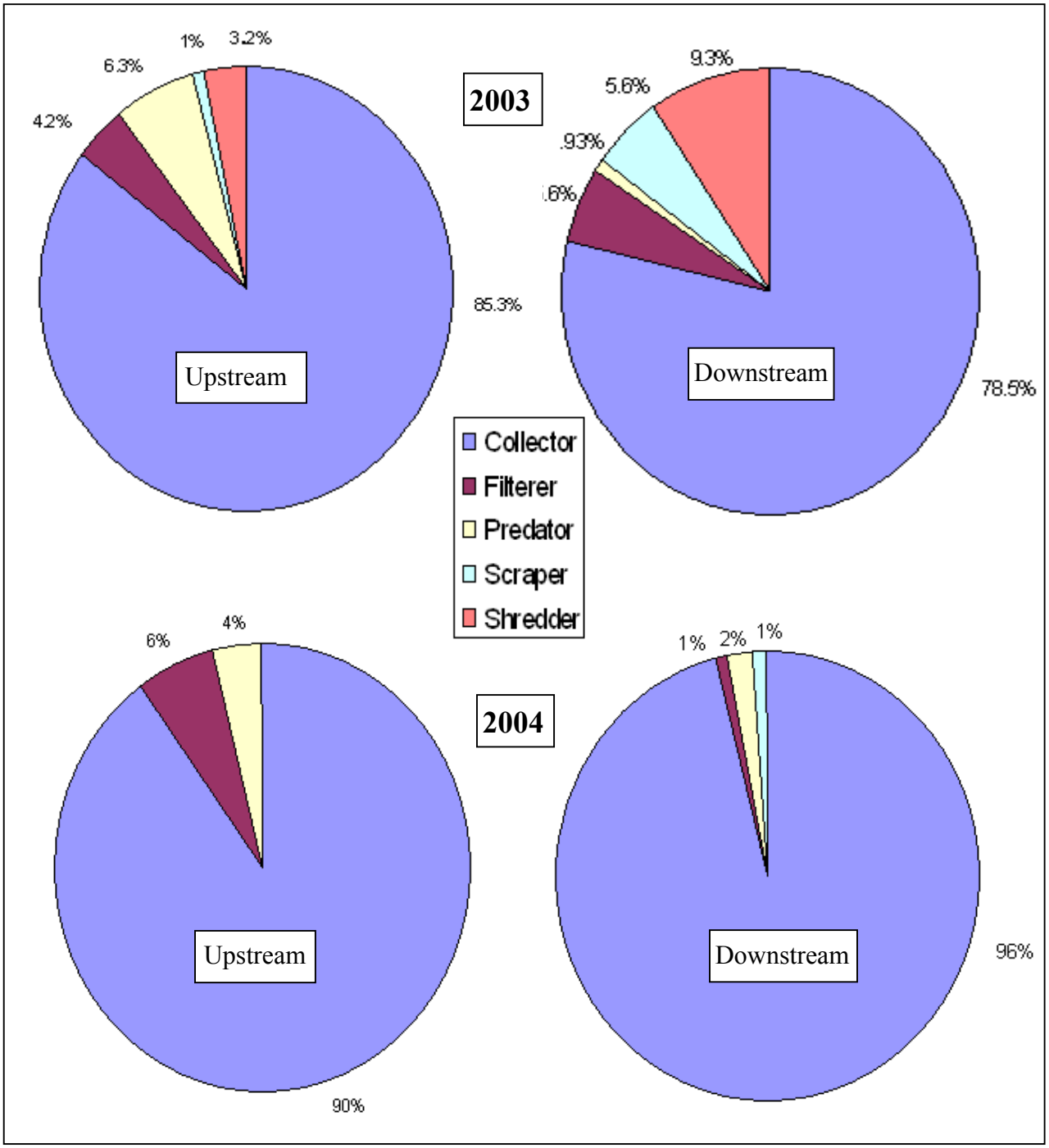


Figure III-D13. Comparison for 2003 and 2004 by percent functional feeding groups in mainstem Paint Branch upstream and downstream of the Stewart-April Lane Tributary.
Percent impervious in contributing watershed about 13%. Benthic Index of Biological Integrity is fair at both stations.



Taxa Richness

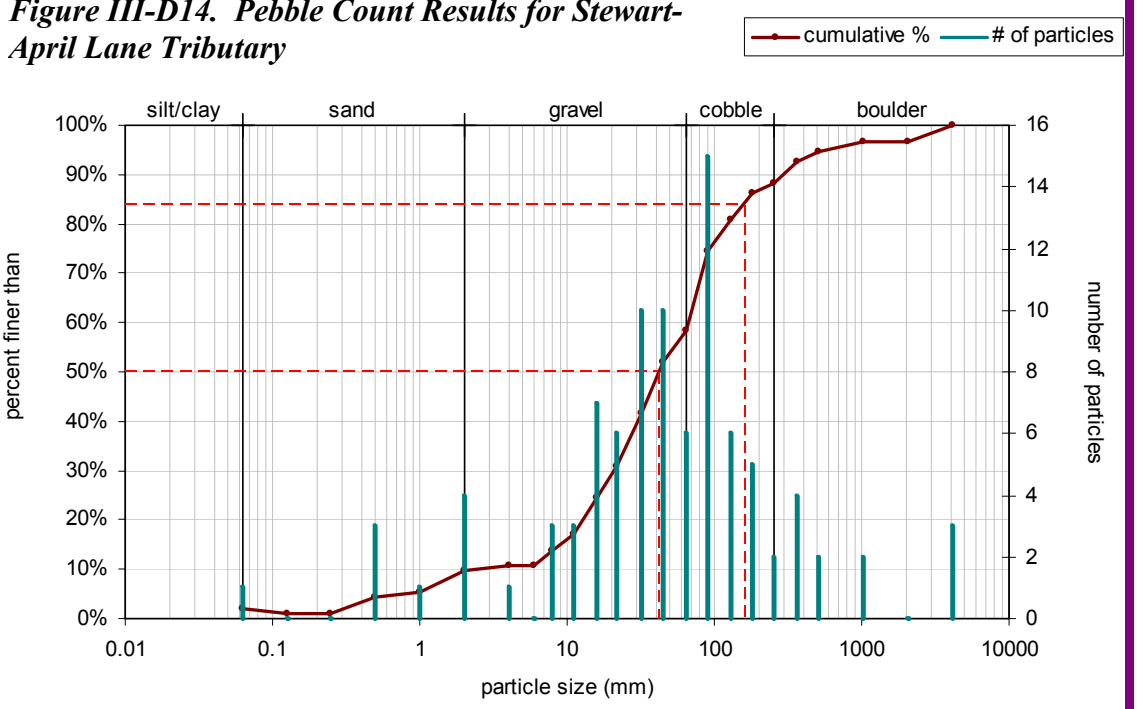
Taxa richness reflects the number of different taxa found at a station, with more taxa showing a more diverse community. The average number of taxa found in the Stewart-April Lane tributary and in Gum Springs was notably less for the five years including 2004 than the average for the four years previous (8 vs 10 taxa in Stewart-April Lane tributary and 12 vs 18 taxa at Gum Springs). This may be due to the greater than average number of storm events during 2004 which generated greater than average stream channel, and thus benthic habitat, disturbance. However, the number of taxa in Stewart-April was consistently lower than that in Gum Springs and was also less than for either mainstem station--9 taxa upstream and 14 downstream for the five-year average.

Physical Stream Assessment

The Permit requires the County to conduct a geomorphologic stream assessment between the outfall and instream monitoring station. To examine stream morphology in the Stewart-April Tributary, the County has completed a longitudinal profile, two cross sections, pebble counts, sinuosity measurements, and slope calculations. Methods for this stream morphology study are the same as those found in the Stormwater Design Manual criteria section. These are preliminary results based on only one year of monitoring. When the retrofit is completed, another stream morphology survey will be conducted and more detailed analysis of the data will be completed.

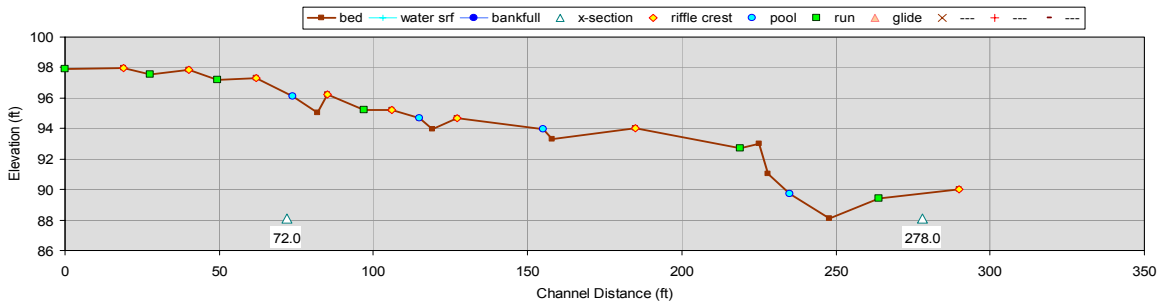
The pebble count was taken throughout the entire longitudinal reach and proportioned among pool, run, and riffle lengths. The graphed results are shown in Figure III-D14.

Figure III-D14. Pebble Count Results for Stewart-April Lane Tributary



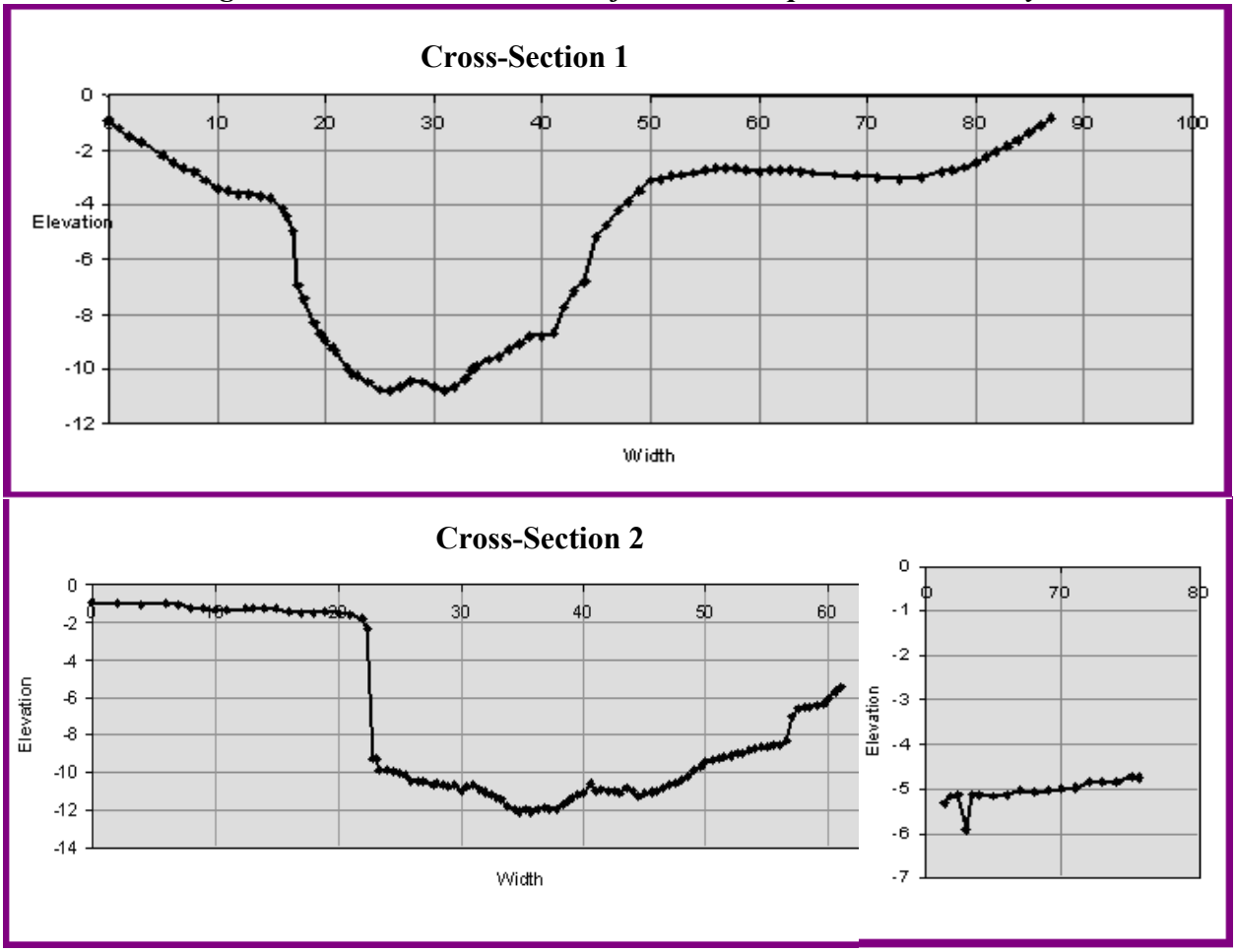
The longitudinal profile is shown in Figure III-D15 for a total length of 290 feet (20 bankfull widths). A reading was recorded at the start of each fluvial type, in addition, the maximum depth of the pools were recorded.

Figure III-D15. Longitudinal Profile for Stewart-April Lane Tributary



Two cross sections have been established, one in a straight run and the other on a bend. Results are shown in Figure III-D16 for both Cross section 1 and 2. Cross section 2 is plotted on two graphs as a result of the graphing program which automatically sets the scales.

Figure III-D16. Cross-Sections for Stewart-April Lane Tributary



D2. Stormwater Design Manual Monitoring

The Permit requires the County to evaluate the effectiveness of the *2000 Maryland Stormwater Design Manual* criteria for stream channel protection. This includes permanently monumented cross-sections, annual comparison surveys, and hydrologic and/or hydraulic model to monitor stream channel changes as a result of development or retrofits in the contributing watershed.

The County selected the Clarksburg area to conduct the evaluation for stream channel protection. As part of this study, the County has chosen a "positive control" area, Soper's Branch (LBSB101) in the Little Bennett watershed, largely County parkland where little change in land cover will occur, and a test area, Little Seneca 104 tributary (LSLS104), where development is proceeding using the new stormwater design manual criteria.

In addition to meeting Permit requirements, these areas are part of an integrated hydrological study being conducted in partnership with USGS, U.S. EPA, and the University of Maryland. The five areas included in this study are shown in Figure III-D17. In addition to the Soper's Branch and LSLS104 tributary, there are three study areas in the Little Seneca watershed. These include Crystal Rock (LSCR201) as a "negative control" area. This area has already been developed at an intensity similar to that expected in the Clarksburg area but using the State's pre-2000 design criteria. The two other areas, Little Seneca 109 tributary (LSLS109) and Cabin Branch tributary (LSCB201), are within the Clarksburg area and will be developed using the 2000 design manual criteria.

Figure III-D18 shows land cover from the 2002 aerial photos for the Soper's Branch control area and LSLS104 test areas along with the Master Plan for development of the LSLS104 test area and the 2004 aerial photo of LSLS104. Monitoring sub-areas and station locations are shown on each photo and drawing. During 2003, the LSLS104 test area experienced rapid development and corresponding land cover changes with occupied homes in sub-areas 2 and 3 during 2004. The Master Plan shows intense development with mainly single-family residential. Impervious cover will exceed 30% at build-out.

In this annual report, only the positive control (Soper's Branch) and test area LSLS104 tributary will be evaluated. The results are preliminary based on only two to three year's of monitoring. The majority of Soper's Branch watershed is forested except for a small portion of pasture upstream of Sub-area 1. Sub-areas 1 and 2 in the LSLS104 test area are upstream of stormwater management facilities for Greenway Village, the major development to the east of the tributary while sub-areas 3 and 4 are downstream of those BMPs. The west side of the tributary's developments is under construction during 2005 with the outlets from stormwater BMPs entering the tributary just above sub-area 2 and 3 according to the approved master plans.

Figure III-D17. Monitoring stations for Clarksburg Area Monitoring

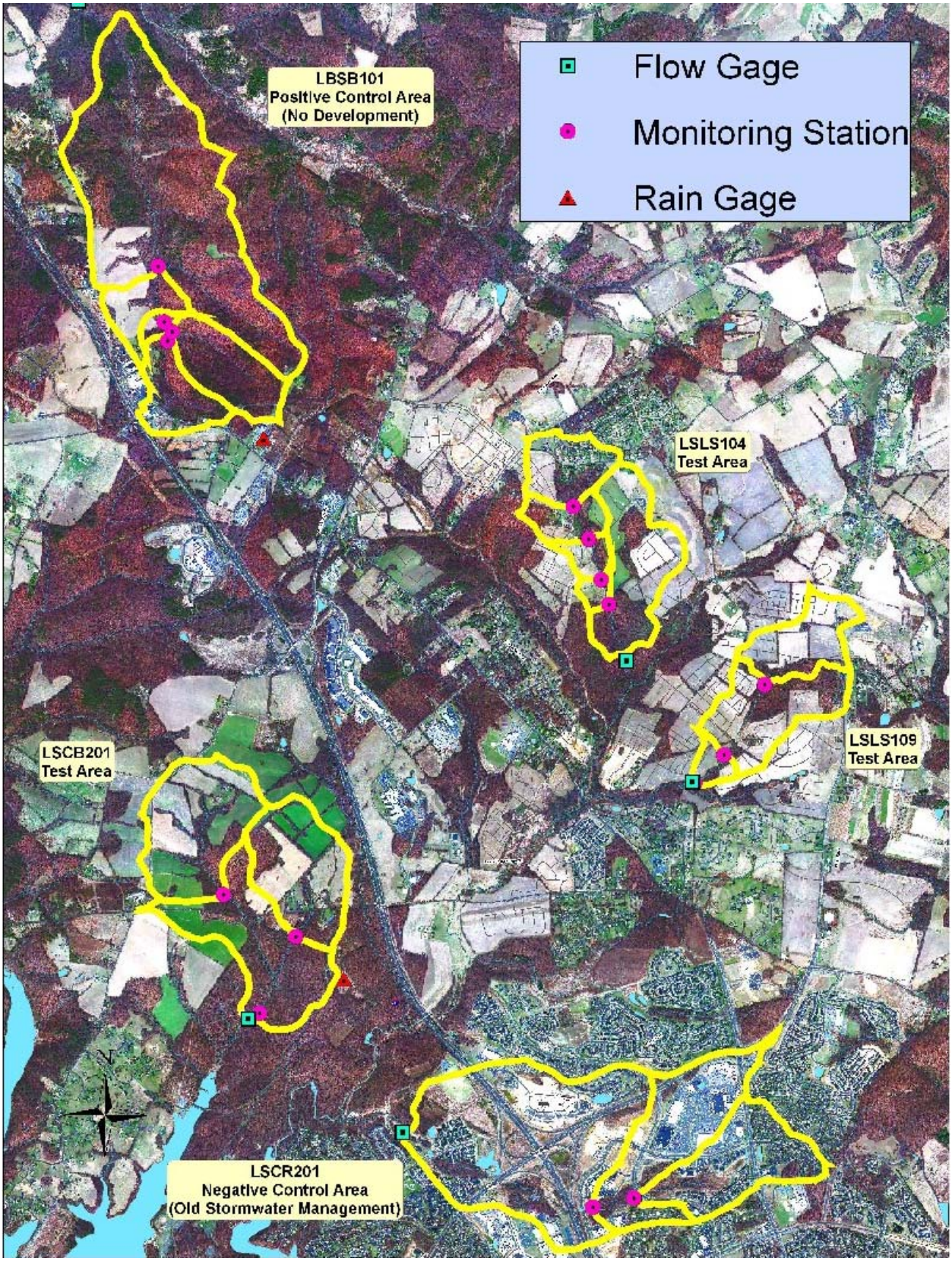
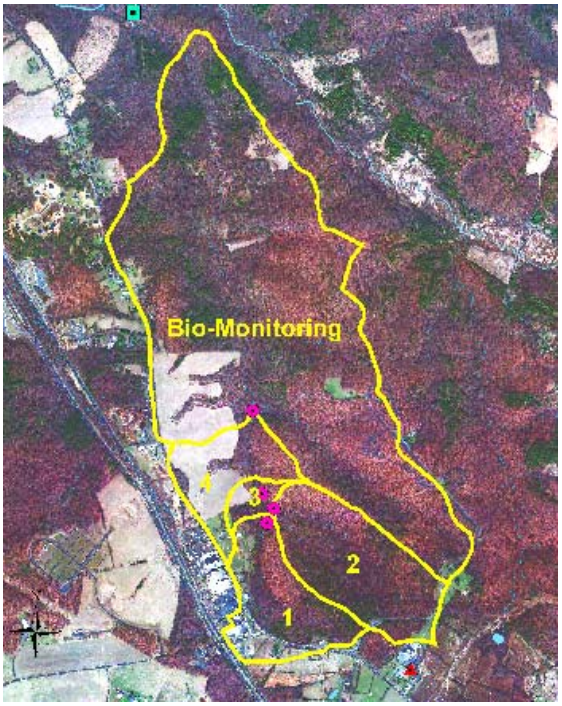
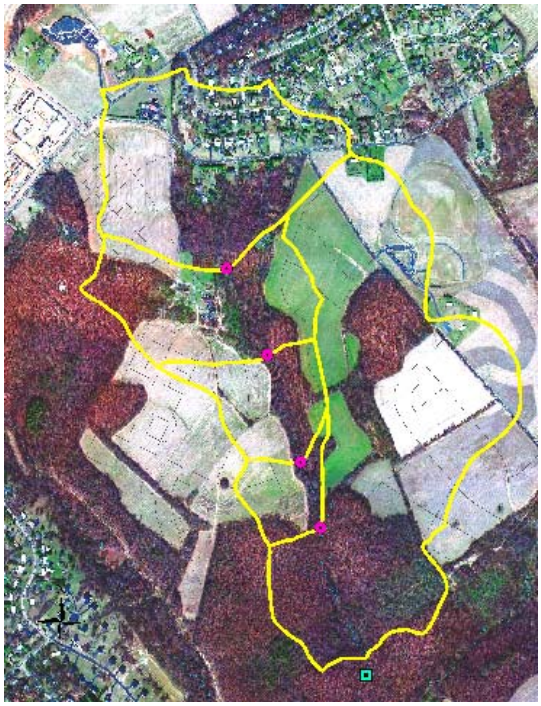


Figure III-D18: 2002 Aerial Photos of Soper's Branch(LBSB101) Control and LSLS104 Test Areas, Master Plan of development in LSLS104 Test Area, and 2004 aerial photo of LSLS104 showing land cover change in two years. *Monitoring sub-areas and station locations are shown on each photo and drawing.*

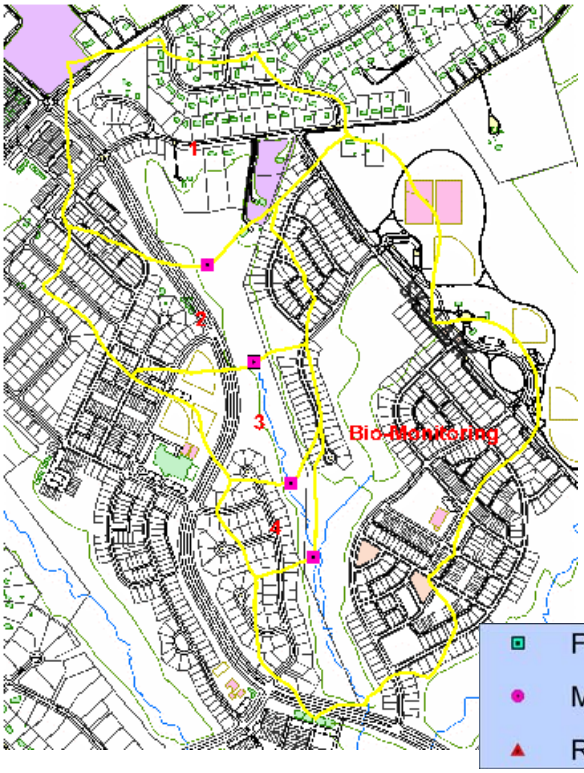
2002 Aerial Photo for LBSB101 Control Area



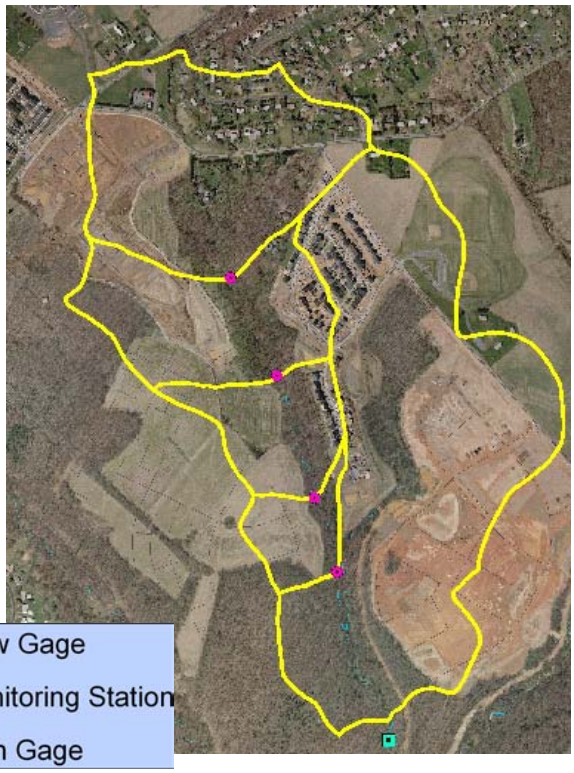
2002 Aerial Photo for LSLS104 Test Area



Master Plan for LSLS104



2004 Aerial Photo for LSLS104



Flow Gage
Monitoring Station
Rain Gage

Monitoring Approach

Both the positive control and test area include four sub-areas for longitudinal profile, pebble count, cross section(s), straight line distance, and slope data collection or calculation. In addition to these parameters, hydrology (continuous rainfall and streamflow), photo documentation at cross sections, fish and benthic macroinvertebrates, and water temperature data are collected. Table III-D7 shows the number of sub-areas within each study area, their drainage areas, length of the longitudinal profiles, and the number of cross sections.

Table III-D7: Geomorphological Parameters for the Control and Test Areas.

Study Area	**Soper's Branch LBSB101**				**LSLS104**			
Type of site	Positive Control				Test: 2000 Design Manual Stormwater Controls			
Construction start year	No construction				2003			
Sub-Area	1	2	3	4	1	2	3	4
Drainage Area (sq. mi.)	0.11	0.28	0.35	0.56	0.11	0.18	0.21	0.46
Length of longitudinal profile (ft)	123	125	269	206	159	163	234	436
Number of cross sections	2	2	3	2	2	2	4	3

The first year that the County began collecting data for the stormwater design manual monitoring was in 2002. However, at that time, the County was developing the methodology to effectively monitor the developing watersheds and therefore only one cross section and photo documentation was conducted at the four areas in the LSLS104 tributary. In 2003, the county adopted U.S. Fish and Wildlife's methodology for conducting longitudinal profiles, pebble counts, and cross sections stated in their literature entitled "Bankfull Discharge and Channel Characteristics of Streams in the Piedmont Hydrologic Region" (McCandless and Everett, 2002).

Each study tributary was walked and longitudinally surveyed to determine areas of change in fluvial events and slopes. Predominately, the upper headwaters of these were mostly riffles and an occasional pool (typically deemed as Area 1 or 2). Further downstream the riffles decrease as the run lengths increase (Area 3 or 4). After these areas are defined, drainage areas are calculated for each study area.

The County is in the process of developing a comprehensive database to store, query, analyze, and report the findings for this project. In the interim, the County is using the applications developed for the Ohio Department of Natural Resources' Reference Reach Spreadsheet, Version 4.0L (Mecklenburg, www.dnr.state.oh.us/soilandwater/streammorphology.htm). This spreadsheet has the ability to quickly depict field measurements using simple graphs and calculations. The DEP has modified this spreadsheet to allow for the cross sectional area calculation between benchmarks.

Photo Documentation

Photos of left-right banks and upstream-downstream were taken at each cross section of each area. In a period of 1 year, Soper's Branch has changed drastically in some of the study areas. Figure III-D19 depicts a sand bar formation, a change in which side of the channel the water flows, tree falls, and other visual changes in stream features. Over time, these photos will enable the County to pictorially document any drastic changes that may occur in the positive control, negative control, and test areas. In Figure III-D20, LSLS104 Area 4 captures how this stream has shifted to a channel that was abandoned in 2002 (right side of the photos).

Figure III-D19: Soper's Branch (LBSB101) Sub-Area 2 Cross Section 1 - Facing Upstream in 2003 and 2004.

Figure III-D20. LSLS104 Sub-Area 4 Cross Section 1 - Facing Downstream in 2002 and 2004.

Preliminary Results

Cross Sections

Initial examination of the cross sectional data for both LSLS104 and Soper's tributaries depict that the two streams are shifting. The majority of the changes in the cross sectional areas are minimal from one year to another. However in the LSLS104 test area, sub-area 4, cross-section 2 had a significant change of approximately 24 square feet. The physical topography of the cross sections between both the positive control and the test area showed erosion and sediment deposition within each cross section. During the next year's monitoring, the County will establish a fixed rebar marker at the 1.5 year storm event to provide a fixed location to evaluate the channel forming flow. A summary of the cross-section information is shown in Table III-D8. Diagrams of the cross-section information and channel forming flow line are included on CD in Attachment A.

Table III-D8. Cross sectional Areas in sq. ft. for Control and Test Areas

Cross-Section#:		**1**			**2**		**3**	
Area (sq.ft.)	**Year:**	**2002**	**2003**	**2004**	**2003**	**2004**	**2003**	**2004**
LBSB101 Control Area	Sub-Area 1	n/a	55	57	134	142	n/a	n/a
	Sub-Area 2	n/a	38	38	72	60	n/a	n/a
	Sub-Area 3	n/a	114	121	161	169	77	84
	Sub-Area 4	n/a	65	68	54	56	n/a	n/a
LSLS104 Test Area	Sub-Area 1	85	85	86	169	173	n/a	n/a
	Sub-Area 2	94	84	86	189	188	n/a	n/a
	Sub-Area 3	45	44	44	59	57	71	76
	Sub-Area 4	62	62	58	58	34	46	54

Longitudinal Profile

Though only two years worth of data has been collected thus far, there is a fairly large change in the longitudinal profiles for the test and the positive control sites, shown in Figure III-D21. The change in elevation and the type of fluvial features present from one year to another verify how active these streams are whether they are in a forested area or a site located in an actively developing area. The summation of the lengths, slopes, and proportions for each of these fluvial features at each area is captured in Table III-D9. Generally, the pools' slopes are very close to 0%, the runs' slopes are typically slightly higher than 0.9%, and the riffles' slopes have the highest values ranging from 1.2 to 5.7%. The fluvial feature ratios verify how drastic the lengths and appearance/disappearance of these fluvial features are within both the Control and Test area. In a period of a year, sub-areas 1 and 2 in the control area gained 40 feet in pools and lost about 20 feet of riffles while the pools in sub-Areas 1 and 2 in the test area remained the same, run sizes increased, and about 30 feet in riffles was lost.

Figure III-D21: Longitudinal Profiles at Area 4 in Soper's Branch (Control) and LSLS104 (Test)

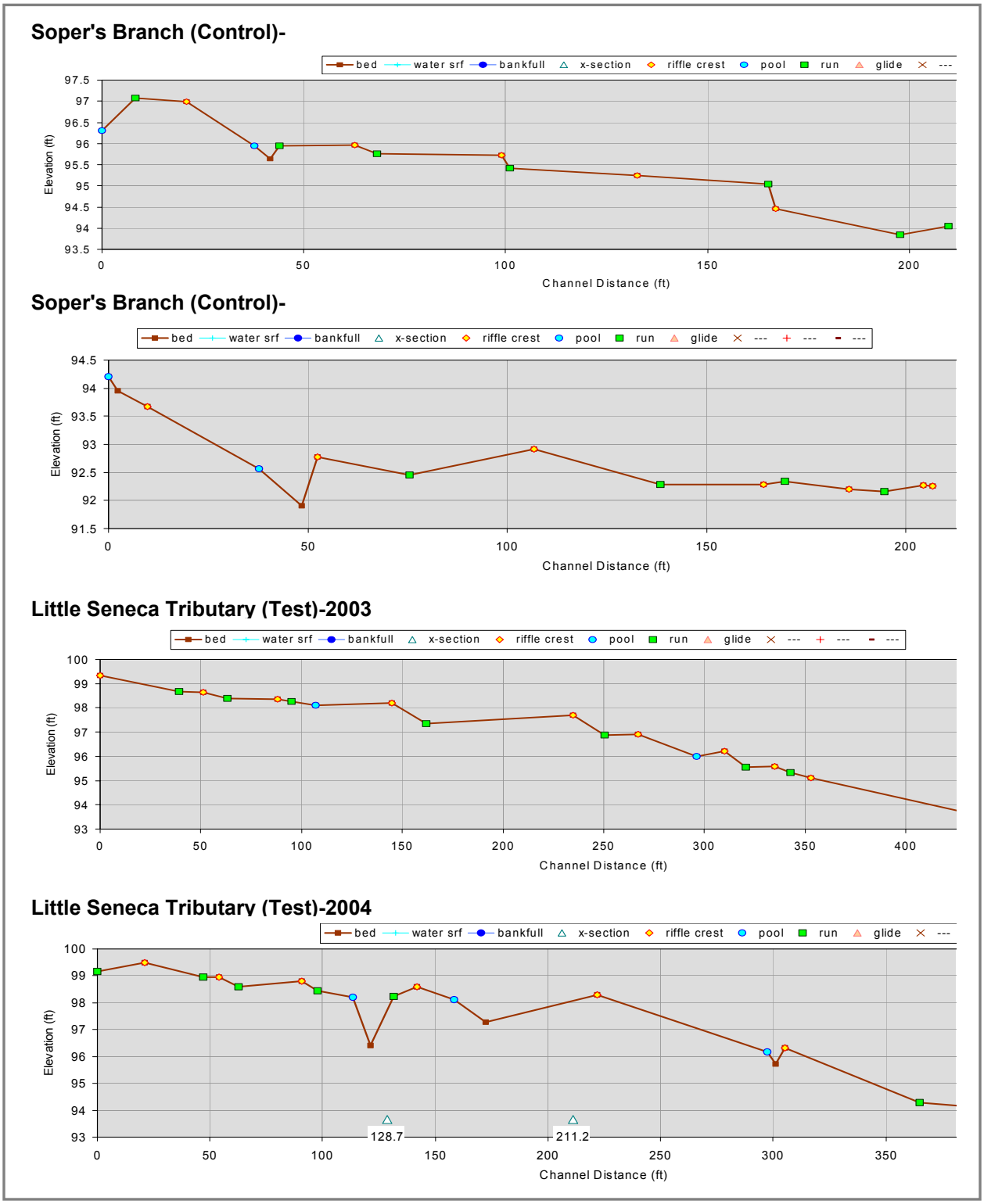


Table III-D9: Comparison of the Fluvial Features in Control and Test Areas 2003- 2004.

Feature		Year	LBSB101 Control Area				LSLS104 Test Area			
			Sub-Area 1	Sub-Area 2	Sub-Area 3	Sub-Area 4	Sub-Area 1	Sub-Area 2	Sub-Area 3	Sub-Area 4
Pool	Length (ft)	2003	11	11	53	14	18	27	44	52
		2004	56	74	113	25	18	25	66	89
	Slope (%)	2003	0	0	0.1	0	0.7	0	0	0
		2004	0	0	0	2	0	0	0	0
Riffle	Length (ft)	2003	88	85	143	88	175	119	126	221
		2004	57	62	96	99	143	89	61	206
	Slope (%)	2003	5.2	3.3	2.4	5.7	1.9	2	3	3.3
		2004	5.4	3.8	3.5	1.2	4.1	4	3.6	3.5
Run	Length (ft)	2003	25	29	72	108	n/a	18	65	163
		2004	10.2	n/a	60	83	2	49	110	132
	Slope (%)	2003	0	0.15	0	4.8	n/a	1.7	1.4	0.4
		2004	0.2	n/a	0	0	0	0	0.95	0
Ratio	Pool:Riffle: Run	2003	1:07:02	1:07:02	2:05:03	1:04:05	1:09:00	2:07:01	2:05:03	1:05:04
		2004	4:05:01	5:05:00	4:04:02	1:05:04	1:09:00	2:05:03	3:02:05	2:05:03

It is worth noting that with so much change in the fluvial features per area that the overall slope of each area is fairly constant from one year to the next as shown in Table III-D10. In addition, the meandering of the stream has not noticeably changed except for possibly Test Area 4. It is uncertain whether this is a physical change or an error in the data collection for that site. Analysis of year 2005 data should identify whether this was a natural shift or an error.

Table III-D10: Total Longitudinal Reach Slope and Sinuosity in Control and Test Areas 2003-2004

		Total Longitudinal Slope (%)		Sinuosity	
Area	**Year:**	**2003**	**2004**	**2003**	**2004**
LBSB101 Control Area	Sub-Area 1	2.1	1.8	1.4	1.4
	Sub-Area 2	2.2	2.3	1.2	1.4
	Sub-Area 3	1.1	0.6	1.3	n/a
	Sub-Area 4	1.1	0.9	1.1	1.1
LSLS104 Test Area	Sub-Area 1	1.7	1.7	1.29	1.2
	Sub-Area 2	1.6	1.2	1.1	1.1
	Sub-Area 3	1.2	1.0	1.4	1.4
	Sub-Area 4	1.3	1.3	1.4	2.8

Pebble Count

The median particle size, D50, has shifted from silt/clay particle size to medium and fine gravel in Test Areas 2 and 3 respectively, shown in Table III-D11. This would suggest that these two areas in the stream channels are either depositing/exposing larger stream bed materials and/or depositing finer streambed materials out into the flood plain or downstream. In Control Area 4, there was a shift from coarse gravel to silt/clay, potentially exhibiting a depositional area in the tributary.

Table III-D11: Results of Pebble Counts in Control and Test Areas 2003- 2004.

		Size: D50 (mm)		Particle Type	
Study Area	**Year:**	**2003**	**2004**	**2003**	**2004**
LBSB101 Control	Sub-Area 1	8.4	8.3	Medium Gravel	Medium Gravel
	Sub-Area 2	8.9	8.9	Medium Gravel	Medium Gravel
	Sub-Area 3	9.9	18	Medium Gravel	Coarse Gravel
	Sub-Area 4	16	0.062	Coarse Gravel	Silt/Clay
LSLS104 Test	Sub-Area 1	2.5	9.5	Very Fine Gravel	Medium Gravel
	Sub-Area 2	0.062	10	Silt/Clay	Medium Gravel
	Sub-Area 3	0.062	7.4	Silt/Clay	Fine Gravel
	Sub-Area 4	8.2	5.7	Medium Gravel	Fine Gravel

Biology

Table III-D12 show results of benthic macroinvertebrate monitoring since the year 2000 for both the Control and Test areas. From the year 2003 to 2004, there was an apparent decline from good to fair in the benthic macroinvertebrate community at the LSLS104 Test Area,. In contrast, the benthic community in the Control Area improved from good to excellent.

Table III-D12. Benthic Narrative Conditions in the Control and Test Areas 2000-2004

Station	Tributary Type	Year	Benthic Narrative
LBSB201A	Positive Control	2000	Good
		2003	Excellent
		2004	Excellent
LSLS104	Test	2000	Good
		2001	Good
		2002	Good
		2003	Good
		2004	Fair

Modeling the Selected Watershed

The Permit requires that a hydrologic and/or hydraulic model be used to analyze the effects of rainfall; discharge rates; stage; and, if necessary, continuous flow on channel geometry. The DPS included conditions in the development water quality review process to include a hydrologic study point at the DEP monitoring station at LSLS104. This was deferred until the DPS had approved the final water quality plan (FWQP) so that the sizing and location of the stormwater management structures could be finalized. The preliminary hydrology model was completed in June 2005 and is now in technical review. The TR-20 routing was quite complex because of the number of pre-treatment and storage structures in the contributing drainage area. A possible follow up run using "pre-development" (forest and meadows) rather than "existing development" conditions is being considered.

Relationship between Rainfall and Stream Height

Due to the small drainage areas and the difficulties in measuring the quick stormwater events, the flow rating curves have not been completed for the five continuous flow monitoring stations in the control and test areas. The majority of the USGS' flow gages are located in larger watersheds where the stormwater flows last longer and discharges are easier to measure. The USGS anticipates completion of the first set of rating curves by mid 2005 summer.

Figure III-D22 shows the rainfall pattern at Little Bennett Regional Park compared to preliminary flow gage stage heights at Soper's Branch and Little Seneca Tributary. There is a noticeable difference in the timing and magnitude of peak flows between Soper's Branch and the LSLS104 Test Area.

The LSLS104 Test Area includes two stormwater management facilities which may be affecting the stormwater runoff pattern. Potentially the stormflow peaks in LSLS104 could be stored or detained by the upstream stormwater management ponds. In comparing the rainfall data with the stage heights, there seemed to be little or no difference in the time of peaks between the control and test areas. There was a difference in the stage heights between the two tributaries during smaller rain events. For example, during the rain event that occurred on September 8, 2004 with 0.4 inches of rain, the stream height in the Soper's Branch (Control) tributary increased by about 0.5 feet while the stream height in the Little Seneca (Test) tributary increased by about 0.3 feet.

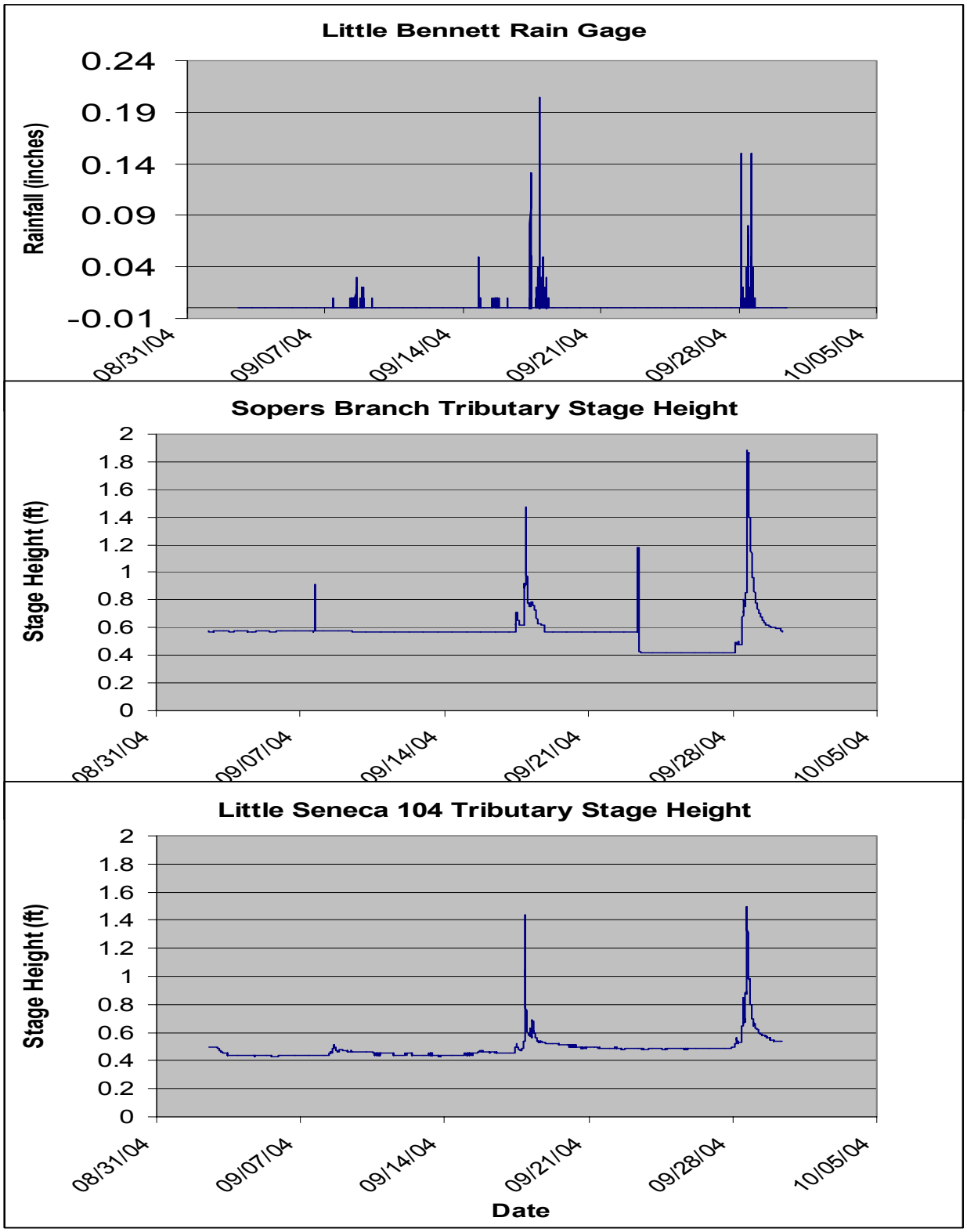
Preliminary Conclusions

The data analysis included in this report is broad and generalized because of the limited time period (two years) covered by the monitoring available. Streams change over time whether human activity is present or not. The majority of these changes seem not to drastically affect the overall stream slopes or meandering patterns, although changes in fluvial features and cross sectional morphology do occur. The limited data to date showed a change in streambed composition at LSLS104 in Sub-areas 2 and 3, from having a predominantly silt/clay to a fine/medium gravel particle size. At Soper's Branch, the Control Area, the streambed at Sub-Area 4 changed from having predominately coarse gravel to a silt/clay composition.

The changes in cross sections in the Control and Test areas do not seem to be correlated with changes in particle size based on the first two years of monitoring. There is not enough data compiled to understand the changes in maximum width and depth observed in these two areas.

The biological degradation in the test tributary is a concern and it is believed that the benthic macroinvertebrate community has already seen the impacts of development. With only two years of geomorphologic data, there is no strong correlation as to why the benthic community quality showed a decline. During the 2003 construction phase of the Greenway Village development, located in the Test Area, there was a stop work order issued after a large sediment spill was discovered from the construction site. This is a potential cause for the degradation in the benthic community. However, physical changes associated with these types of episodic events that produce biological impairments may go undetected during the annual geomorphological survey.

Figure III-D22: Continuous Rainfall(inches) at Little Bennett Regional Park and Flow Gage Stage Heights for Soper's Branch (Control) and Little Seneca 104 (Test) Areas. Summer 2004.



E. Management Programs

E1. Stormwater Management Program

Facility Inspections and Maintenance

In 2004, the DEP performed 998 initial inspections to assess the repair and maintenance needs of a stormwater management facility. Of the 998 inspections, 761 were at privately owned facilities and 237 were at publicly owned facilities. Table III-E1 shows the total number of initial inspections by facility type and ownership. The majority of the inspections occurred at three structure types-- oil-grit separators (436), infiltration trenches (209), and dry ponds (110). A majority of the inspections were completed by DEP's contractor under the Stormwater Facility and Inspection Support contract, although a few inspections were completed by DEP's Stormwater Inspectors or Senior Engineer. These initial inspections identified need for repair at approximately 59% of all structures-- about 88% of the aboveground structures and 39% of the underground structures. In contrast, during 2002, initial inspections identified some sort of repair was needed at 89% of the aboveground structures and 63% of the underground structures.

Aboveground facilities include ponds, infiltration devices, infiltration basins, filtration basins, and filtration devices (bioretention and surface sand filter) structure types. Underground structures include all structures located physically underground such as oil-grit separators, underground sand filters, underground infiltration, and underground storage facilities. As in previous years, the number of underground inspections for reasons other than routine maintenance was much lower than those for aboveground structures.

Table III-E1. Total Number of Initial Inspections by Facility Type and Ownership

Structure Type	Privately Owned	Publicly Owned	Total Number, Percent w/Repairs
Dry Pond (Detention)	76	34	110
Filtration (above and belowground)	47	3	50
Filtration Basin	8	1	9
Infiltration (above and belowground)	107	102	209
Infiltration Basin	8	6	14
Other (above and belowground)	27	1	28
Separators	371	65	436
Shallow Marsh/Wetland	15	4	19
Underground Storage	68	2	70
Wet Pond (Retention)	34	19	53
Total	***761***	***237***	***998***
Total Repairs			*597, 59%*
Total Aboveground with Repairs			*368, 88%*
Total Underground with Repairs			*229, 39%*

In 2004, there were 395 inspections at aboveground facilities and 88 inspections at belowground facilities related to public complaints, to follow-up inspections, finalization inspections, and inspections at facilities being considered for transfer into the DEP's Stormwater Facility Maintenance Program (SWFMP). After the initial inspection, DEP's stormwater inspectors on average complete two follow-up inspections per aboveground facility and one follow-up inspection per underground facility to ensure the facility is properly repaired and maintained. In addition, DEP's inspectors perform a final inspection for each facility once repairs and maintenance are completed. This inspection is completed to ensure the facility is in compliance and is available for transfer in the SWFMP. Maintenance (other than grass cutting and trash removal) is funded through the Water Quality Protection Charge for facilities in the SWFMP. The cost for repairs to 130 ponds during 2004 was $1,105,981 an average of $8,507 per pond.

Aboveground Facility Inspections

The number of initial inspections of aboveground facilities in 2004 was 416. Of these, 250 were at privately owned and 166 were at publicly owned facilities. Of the 416 facilities, 368 needed repairs, two required immediate repairs. The DEP inspection program provided final inspections at 154 of these facilities—152 at privately owned facilities and 2 at publicly owned facilities. Four of the privately owned facilities have been accepted for transfer into the DEP program.

Belowground Facility Inspections

The number of initial inspections of belowground facilities in 2004 was 582--510 at privately owned and 71 at publicly owned facilities. Repairs were made at 229 facilities. , The DEP provided final inspections at 563 of these--505 privately owned and 58 publicly owned facilities. Fifteen of the privately owned facilities have been accepted for transfer into the SWFMP.

Stormwater Management Ordinance and Implementation

The permit-required information on stormwater management concept plans approved during the reporting year is shown in Table III-E2 and included in the database on the CD in Attachment A. The number of sediment control permits increased from 2003 to 2004 as did the total developed acres and the amount of land served by stormwater management facilities. This was due to a slight increase in land development activities in 2004. However, the number of new preliminary plans declined from 2003. This may signal a leveling off or modest decline in new development activities in the coming years.

In existing residential neighborhoods, new houses are being constructed on a large number of either infill lots or lots in which the existing house will be demolished and replaced by a new house. Since houses already exist on surrounding lots and infrastructure is already in place, onsite stormwater management may be impractical for smaller lots. Much of the time, the concern is not how to treat or infiltrate runoff but how to convey it safely away from neighboring properties

In these cases, the previous exemption has been verified and the stormwater management requirement has been satisfied through fee payment. During 2004, there were 240 such cases on small, existing residential lots that were created prior to enactment of the first stormwater management laws.

Table III-E2. Permit-Required Stormwater Programmatic Information Calendar Years 2001-2004.				
PERMIT CONDITION	**YEAR**			
	2001	**2002**	**2003**	**2004**
Number of Sediment Control Permits Issued	886	890	912	962
Total Number of New Preliminary Plans Received, including those that are exempt or for which full or partial waivers were granted	231	190	239	219
Redevelopment Projects	35	26	28	29
Projects Exempt from Stormwater Management Requirements	59	27	0	0
Number of New Projects Which Received Full or Partial Waivers of Two-Year Stormwater Management Requirements	52	37	0	0
Number of New Projects Which Received Waivers of Channel Protection Volume Storage Requirements	0	5	3	7
Number of New Projects Which Received Waivers of Quality Management Requirements	31	40	9	8
Number of Redevelopment Projects Which Received Full or Partial Waivers of Two-Year Stormwater Management Requirements	23	8	0	0
Number of Redevelopment Projects Which Received Waivers of Channel Protection Volume Storage Requirements	0	7	2	8
Number of Redevelopment Projects Which Received Waivers of Water Quality Management Requirements	10	4	0	3
Waiver Fees (Required Where Waivers Are Granted. Collected at the Time Building Permits Are Requested)	$1,183,587	$1,200,484	$910,213	$504,806
Acres Developed (Based on Issued Sediment Control Permits)	2,125	1,390	1,466	1,498
Acres Served by Stormwater Management Facilities (Based on Approved Stormwater Facilities which are included in issued Sediment	1,256	1,122	1,382	1,437

Onsite treatment is normally required for similar circumstances where the lots are large enough to accommodate onsite nonstructural controls without adversely affecting neighboring properties. In these cases, the previous exemption has been verified and the stormwater management requirement has been satisfied through fee payment.

The majority of collected stormwater management waiver fee dollars pertain to waivers of channel protection volume requirements for commercial redevelopment projects. The MDE does not require channel protection volume for redevelopment but the County does. Therefore, if the County waives a redevelopment project of channel protection volume requirements, it is not waiving the project of any State-mandated stormwater management controls. The amount of fees collected in 2004 is significantly less than in prior years. This does not indicate a reduction in redevelopment activities. The reduction in fees is related to the minimum release rate the MDE manual says is .required for onsite channel protection structures. Sites which produce less runoff are exempt from providing channel protection measures. Many redevelopment sites produce less than the minimum rate of flow. Therefore, redevelopment projects that were waived in past years with the collection of waiver fees are now exempt. Water quality requirements are not waived.

Table III-E3 compares BMPs approved and implemented in 2004 by major County watersheds. This information is included in the database on the CD in Attachment A. During 2004, the number of BMPs continued to increase in the Potomac watershed. The number also increased in the Monocacy watershed and remained about the same in the Patuxent and Anacostia watersheds. Individual BMPs may be part of a treatment train, where runoff is initially treated by a filtration facility and then discharged into a pond for additional treatment.

Table III-E3. Stormwater Implementation Information by Watershed for 2004.

BMP TYPE	POTOMAC	PATUXENT	ANACOSTIA	MONOCACY
Pond	1	0	1	1
Wetland	2	0	2	0
Infiltration	36	1	3	6
Filtration	174	0	55	2
Open Channel	0	0	0	0
Other	47	1	9	0
NonStructural	254	71	56	26
CPV_FAC (Channel Protection)	47	0	26	0
QP10_FAC (10-year discharge)	0	0	0	0
FLOWSPLITTERS	69	0	33	0
TOTAL	630	73	184	34

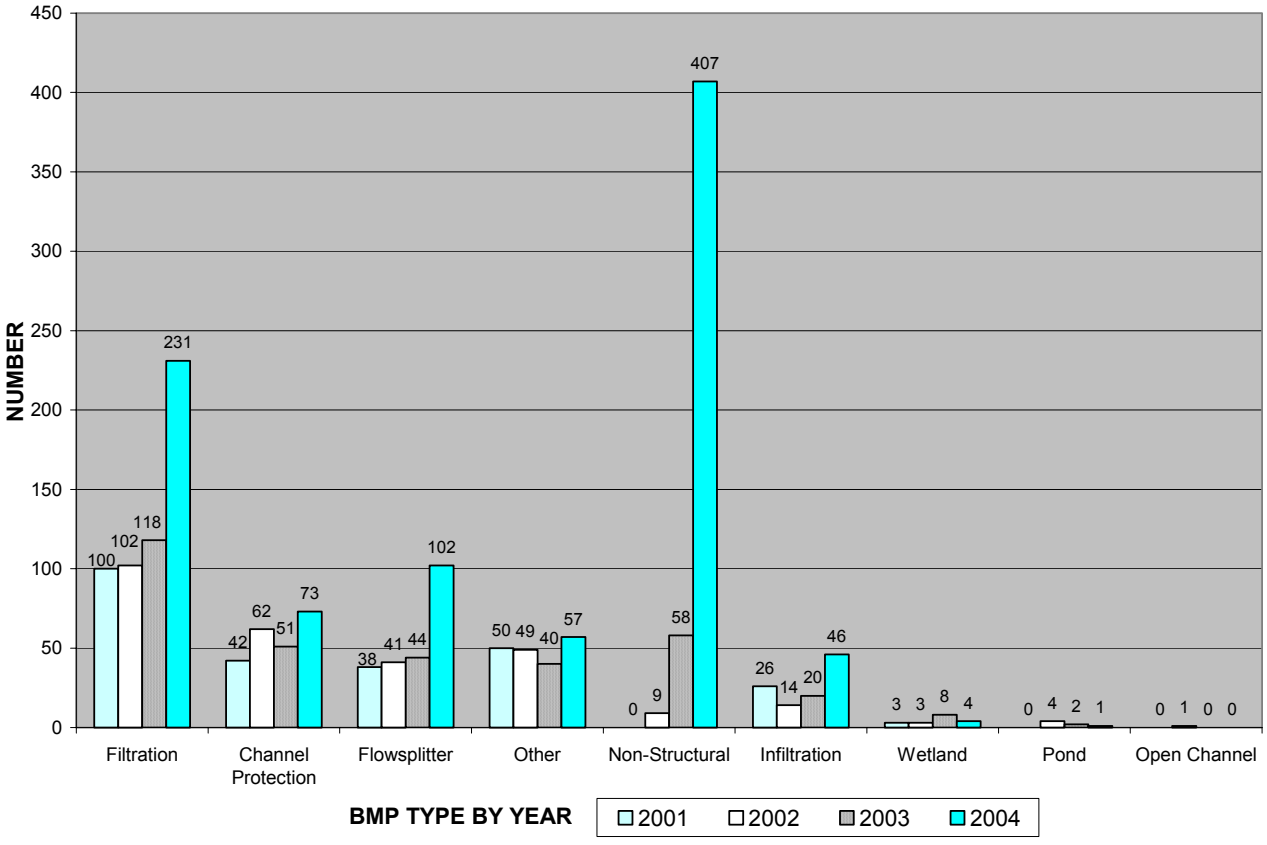
Notes:

1. For This Report CPV Means either Two Year Stormwater Management or One Year Extended Detention depending on when the stormwater management concept was approved.
2. "Other" Facilities Typically Include Those Not Approved By MDE as Meeting Full Water Quality Requirements

As shown in Figure III-E1, filtration practices remained the largest type of BMP from 2001-2003. However, in 2004 the number of nonstructural practices far exceeded any individual type of structural treatment device. Part of the reason for this increase is certainly related to better and more thorough reporting of the design and installation of nonstructural controls. A more significant factor in the increase of nonstructural controls relates to the timing of construction after nonstructural practices were required in the preliminary plan process. Construction started in 2004 on many of the preliminary plans that were approved after implementation of the new standards in July of 2002.

A third factor in the increase of the use of nonstructural practices is the redevelopment of a number of residential lots where structural controls are impractical. Non-structural practices are stormwater runoff treatment techniques that use natural measures to reduce pollution levels, do not require extensive construction efforts, and that may promote pollutant reduction by elimination of pollutant sources. There may be multiple uses or implementations of non-structural techniques within one project. Examples include rooftop runoff disconnection and drainage to vegetated buffers or grassed swales.

Figure III-E1. Comparison of Stormwater Implementation by Type byYear, 2001-2004.



E2. Water Quality Program Enforcement

Outfall Screening

For the year 2004, the DEP screened a total of 124 outfalls with 23 having dry weather flows. The monitoring focused on outfalls contained within the drainage areas of eight biological monitoring sites that showed impairment during 2003 due to factors not directly attributable to physical habitat degradation. These eight reaches were located in Lower and Upper Rock Creek, Muddy Branch, and Watts Branch. Errors in outfall location or type as shown on the existing maps were reported and corrected in the GIS inventory. In addition, 2 new outfalls were identified and added to the existing electronic maps.

Of the 23 outfalls found to have flows, 13 were identified as piped streams with constant flow, and one was an outfall for a stormwater management pond. Nine outfalls had dry weather flows not related to piped streams. Three of these showed detergent above detection limit with all other parameters (Phenol, Chlorine and Copper) being below detection limits. Source tracking for these nine outfalls was unsuccessful.

Results from the outfall screening are included in the database on CD in Attachment A. The DEP has not completed drainage area delineations to outfalls not associated with stormwater management facilities so this field is empty for most of these outfalls.

For the year 2005, the DEP will focus on outfall screening in the Anacostia watershed in association with the enhancement of the Environmental Partners program. The DEP will also follow up at any biological monitoring stations where impairment other than by physical habitat factors was identified during the 2004 watershed screening.

Proposed toxicity screening

The DEP used the results from outfall screening to target 15 outfalls for possible toxicity to aquatic organisms. The DEP has identified outfalls with discharges from piped streams with detectable concentrations of any of the parameters routinely tested (i.e., chlorine, copper, phenol, or detergent) or aberrant values of pH (i.e., <6.0 or >9.0) or conductivity (>500µmhos) were targeted for this additional testing. These outfalls, listed in Table III-E4, exhibited constant flow and thus potentially chronic conditions, rather than potentially sudden acute toxicity conditions from intermittent discharges. Those outfalls which were equal to or greater than 36" and were determined to be piped streams were also targeted for additional testing, even if there was no evidence of chemical contamination. These outfalls were major sources of water to the stream, were close to or flowed directly into the biological monitoring station segment, or could provide contaminated effluents that would be discharged into the stream only during runoff periods.

The DEP is evaluating bio-toxicity test methods to use during 2005-2006 at these targeted outfalls. Both outfall discharge and receiving stream above and below the outfall will be tested. This pilot toxicity test program will be evaluated for usefulness in identifying source of toxicity only, rather than specific toxicity type. The intent is to determine whether toxicity is more prevalent after stormflow events or during dry weather flows. Generally, contaminants during dry weather flows are more likely related to point sources, whereas contaminants in runoff could come from many and

diffuse sources. Source tracking would be extremely difficult if not impossible for detecting contamination during runoff, but probably more feasible during dry weather flows. The primary objective during the pilot phase will be to identify contamination being funneled into the stream via a storm drain network (i.e., the specific outfalls, the "hot pipes"). This would confirm that the impairment observed in the biological community is associated with contaminated water, whether it be from a single point source or a multitude of non-point sources and would determine control strategy needed.

Table III-E4. Outfalls Screened during 2004 Targeted for Pilot Toxicity Testing

Impaired Segment/ Station	OutfalI	Date Screened	Reason to target
Muddy Branch/ MBMB309	ER563P0366	11/30/2004	low pH (5.78)
	FR123P0539	11/30/2004	detergent detected (0.50 mg/l)
Lower Rock Creek (tributary)/ LRLB202	GQ561P0849	12/21/2004	stagnant water, sulfide smell, hypoxic sediments, relatively high conductivity (457 umhos/sec)
	GP563P0099	12/22/2004	large pipe (54"), major tributary, but no chemical aberrations when screened
	GP563P0276	12/29/2004	dual pipes, target at tributary not pipe
	HP563P0232	12/29/2004	recently placed rip-rap in channel
	HP123P9015	12/14/2004	standing water, odors, possible detergent, but below DL
Lower Rock Creek (mainstem)/ LRLR425	HN563P0158	12/15/2004	oil appears to have been dumped in past, gray water, access out of pool below outfall blocked, relatively high conductivity (400 umhos/sec)
	HN562P0020	12/14/2004	discharges to station, relatively high conductivity (482 umhos/sec)
	HN563P0354	12/29/2004	foamy water
	HN563P0387	12/29/2004	stream water backed up into pipe
	210nw03-1	12/15/2004	unmapped 54" piped stream; source of pesticide discharge-May 2000 fish kill, Cu detected (0.2 mg/l), high conductivity (>636 umhos/sec)
	210nw04-1	12/15/2004	unmapped 48" piped stream outfall, detergent detected (2.0 mg/l), relatively high conductivity (401 umhos/sec)
Lower Rock Creek-Kensington	HP343P0001	3/12/2004	Detergent detected (0.50 mg/l), high conductivity (654umhos/sec)
Watts Branch-tributary/ WBSB305	EQ562P0295	12/15/2004	Detergent detected (0.75 mg/l), high pH (9.05)

Water Quality Investigations during 2004

For the calendar year 2004, the DEP Division of Environmental Policy and Compliance (DEPC) investigated 175 water quality complaints and 48 hazardous materials incidents, which resulted in the issuance of 35 Enforcement Actions (8 Civil Citations with fines totaling $4,000 and 27 Notices of Violation (NOVs)). Specific information on enforcement actions is shown in Table III-E5

Most of these violations occurred in the southern, more developed portions of the County. During 2003, the majority of these were improper handling of automotive fluids. During 2004, improper handling or improper disposal of cooking grease was the category with most number of violations.

Table III-E5. Enforcement Actions during 2004				
Date Issued	**Citation/ NOV**	**Violation**	**Defendant**	**Defendant's Address**
1/12/04	NOV	Cooking Grease Discharge	Rollins Real Estate Management	152 Rollins Avenue, Rockville, MD 20852
2/19/04	NOV	Cooking Grease Discharge	City Lite Buffet	9679 Lost Knife Road, Gaithersburg, MD
2/26/04	NOV	Wastewater Discharge	Claridge House/Southern Management Corp.	2445 Laytonsville Road, Silver Spring, MD
3/12/04	NOV	Cooking Grease Discharge	Pierre Matsangakis	11271 New Hampshire Ave., Silver Spring, MD 20904
3/31/04	NOV	Cooking Grease Discharge	Peter Legum, Nellis Corp.	Germ. Square Shopping Center
4/14/04	NOV	Cleaning Product Discharge	Wildwood Construction	11235 Oak Leaf Dr., Silver Spring
5/3/04	NOV	Chlorine Discharge	Georgetown Aquatics	4700 Bready Road, Rockville
5/5/04	NOV	Cooking Grease Discharge	Super Chicken	2531 Ennalls Ave., Wheaton
5/6/04	NOV	Swimming Pool Discharge	Denise Anne Violette	3105 Verona Dr., Silver Spring
5/10/04	NOV	Improper Handling of Road Salt	Casper Management	19110 Montgomery Village Ave., Gaithersburg
5/14/04	$500	Cooking Grease Discharge	Timpanos Restaurant	12021 Rockville Pike, Rockville
5/24/04	NOV	Swimming Pool Discharge	Edward J. Mericle	12809 Jingle Lane, Silver Spring
6/1/04	NOV	Paint Discharge	Jose Aguilar	Modern Designs, 10005 Clearspring Road, Damascus
6/2/04	NOV	Leaking Auto Fluids	Keith Burgess	2803 Atlanta Dr., Silver Spring
6/3/04	NOV	Cooking Grease Discharge	Hunan Manor Restaurant	11237 New Hampshire Ave., Silver Spring
6/7/04	NOV	Paint Discharge	Catania Construction	550 Forest Glen Rd., Silver Spring
6/11/04	NOV	Cleaning Product Discharge	Carol Helman	343 Helman Ave., Waynesboro, PA
6/16/04	NOV	Petroleum Discharge	Sunil Singh	7628 Old Georgetown Rd., Bethesda
6/23/04	$500	Sediment Discharge	J.Fletcher Creamer & Sons	11800 Old Baltimore Pike, Beltsville, MD
7/8/04	NOV	Cooking Grease Discharge	Thuy Trang Thi Ngo	11004 Childs St., Silver Spring
7/8/04	$500	Cooking Grease Discharge	Thuy Trang Thi Ngo	11004 Childs St., Silver Spring
7/19/04	NOV	Leaking Auto Fluids	Joseph Callan	1600 Spottsworth Way, Silver Spring
7/21/04	NOV	Paint Discharge	Angela Lee	14025 Natia Manor Dr., Gaithersburg, MD 20878
8/9/04	$500	Paint Discharge	Jose Aguilar	Modern Designs, 10005 Clearspring Road, Damascus
8/9/04	$500	Failure to submit Compliance Plan	Jose Aguilar	Modern Designs, 10005 Clearspring Road, Damascus
8/12/04	NOV	Cooking Grease Discharge	Rosa Gaza	Anna's Café, 949 University Blvd. East, Takoma Park
8/16/04	NOV	Improper Handling of Auto Fluids	Gregg Orris	Certified Auto Repair, 202 C Park Road, Rockville
9/20/04	NOV	Cleaning Product Discharge	Joseph Butler	Eastham's Exxon, 7100 Wisconsin Ave., Bethesda
10/22/04	NOV	Improper Handling of Cooking Grease	Singh Juglomohan	GNFA Khalsa School, 12917 Old Columbia Pike, Silver Spring
10/27/04	NOV	Discharge of Tile Grout	Israel Cornejo	11501 Georgia Ave., Wheaton
11/4/04	NOV	Improper Disposal of Yard Waste	Russell Holton	14228 Artic Ave., Rockville
11/17/04	$500	Cooking Grease Discharge	Fuddruckers Restaurant	12111 Darnestown Rd., Gaithersburg
11/30/04	NOV	Illegal Dumping of Petroleum	Steven Morgan	12 Piney Glen Ct., Potomac
12/28/04	$500	Failure to submit Compliance Plan	Israel Cornejo	Tony's Int. Cuisine, 11230 Grandview Ave., Wheaton
12/29/04	$500	Petroleum Discharge	Michael Williams	Narrow Way Transport, 5825 O S Drive, Waxhaw, NC

Implementation Status of Stormwater Pollution Prevention Plans

Table III-E6 lists the status of implementation for 2003 and 2004 at County facilities covered under the State General Discharge Permit for Storm Water Associated with Industrial Activities (the General Permit). The State accepted the Notice Of Intents (NOIs) for these facilities in March of 2003 for coverage until November 30, 2007. The County's point of contact for these NOIs is within the DPWT.

In general, compliance with the Stormwater Pollution Prevention Plans is good. There has been an increased awareness among facility managers on the need for routine inspections and housekeeping to keep pollutants from contact with rain water. There is also more attention in preventing trash and litter accumulation, uncovered materials storage, and unlabelled storage containers. The DPWT has committed funding for once a month sweeping of paved area at all of these facilities as another form of source control that keeps pollutants out of the stormwater runoff.

This is the third year, however, with the following three issues that need to be addressed for compliance. These are: updating the Stormwater Pollution Prevention Plans to reflect current operations at these facilities, eliminating outdoor vehicle washing as a non-stormwater discharge, and providing more routine employee training to enhance pollution prevention awareness.

Staffing changes, site changes, and site activities not included on the existing Stormwater Pollution Prevention Plans (Plans) remain to be addressed. The MDE had commented in its last annual review that the DPWT needs to update the Stormwater Pollution Prevention Plans for its permitted facilities, particularly those three that have undergone site changes since the beginning of this permit term: Seven Locks, Gaithersburg/Equipment Maintenance Operations Center, and the Silver Spring/Brookeville facilities. The DPWT needs to find resources to update the Plans for these three sites, either by consultant or using in-house staffing resources.

The lack of indoor vehicle wash facilities at three sites prevents the complete elimination of washwater to the storm drain system. Each facility continues to manage outdoor vehicle washing in order to eliminate the potential for contamination and the direct runoff of washwater to the storm drain system. For example, at the Silver Spring/Brookeville Road facility, all outdoor hoses have been removed to prevent outdoor vehicle washing.

The DPWT will start construction on a new facility at Seven Locks during fall 2005, with facility delivery and a new indoor vehicle wash by winter 2006. There is no currently programmed CIP funding for facility renovations at either the Poolesville or Damascus facilities. The DPWT intends to build a state of the art regional facility in North County which will replace the services provided at these two small sites.

While on a site visit at Colesville Depot in December 2004, County staff found detergent-containing runoff entering that site's stormwater management pond. This was traced back to outdoor truck washing, even with an indoor wash facility at the site. This incident emphasizes the need for routine employee training and awareness of the County's pollution prevention program and of permit requirements to control all intentional discharges to its storm drain system. After this incident was reported, the DPWT arranged a special training session at the Depot, the first at that site since 2001.

Routine employee training continues to be an issue at all but one of the facilities. At the Equipment Operations Maintenance Center (EMOC), all new employees receive pollution prevention training as part of their orientation package. The DEP will continue to work with the DPWT to ensure routine training on pollution prevention and environmental protection for all employees at these facilities.

TABLE III-E6. Results of Annual Site Assessments for Stormwater Pollution Prevention Plan Implementation .

FACILITY	Calendar Year 2003	Calendar Year 2004
Colesville Highway Maintenance Depot Anacostia-Paint Branch; 12 acres	*1. Depot is well maintained and in good condition.* *2. Additional attention needed regarding sweeping the yard and general maintenance clean-up during and after milling operations.* *3. Need to eliminate any outside vehicle washing because of additional permit required.* *4. Storage bins outside need to have a containment devises placed out front.* *5. Pollution Prevention Team needs to be updated to identify responsible parties* *6 Routine pollution prevention training needs to be offered.*	*1. Depot is well maintained and in good condition.* *2. Additional attention needed to sweeping the yard and general maintenance and clean-up during and after milling operations.* *3. Additional attention needed to install straw bale barriers to contain stock-piled materials and during sand and salt mixing.* *4. Material storage areas need to have covered material and equipment storage areas to prevent exposure and run-off* *5. Vehicle service bays do not have interior floor drains* *6. Pollution Prevention Team needs to be updated to identify responsible parties.* *7. No employee pollution prevention training provided during 2004 but special training session arranged during January 2005.*
Damascus Highway Maintenance Depot Potomac-Great Seneca Creek; 1.4 acres	*1. Public drop-off area has been added to routine inspections, and is hand swept weekly.* *2. Salt domes are well maintained and regular sweeping general area is done.* *3. No provisions for indoor vehicle washing at site. Outdoor vehicle washing requires permit.* *4. Spill prevention and containment BMPs are evident in service bays.* *5. Routine pollution prevention training needs to be offered.* *6. Pollution Prevention Team needs to be updated to identify responsible parties*	*1. Depot is well maintained and in good condition.* *2. Still no provisions for indoor vehicle washing at site.* *3. Run-off barriers needed on the down-hill side of the stock-piled materials.* *4. Salt domes are well maintained and regular sweeping of the general area is done.* *5. Public disposal area is well maintained and the yard is hand-swept weekly.* *6. Pre-fab shed added for mechanics tools and parts. Plan update needed.* *7. No employee pollution prevention training provided during 2004.*
Gaithersburg Highway Maintenance Depots, Equipment Maintenance Operations Center & Gaithersburg/Rockville Transit Services	*1. Site plan needs to be updated when the Compressed Natural Gas site at EMOC is completed* *2. Need to cover or eliminate outdoor storage areas and maintain inventory control of products on site.* *3. Need to maintain routine trash removal, area cleaning, and sweeping of paved areas.*	*1. Site plan not yet updated:* *a. Compressed Natural Gas site has been completed at EMOC.* *b. Construction/refurbishment to fuel site at Gaithersburg Depot completed in 2003 and included the installation of one ethanol dispenser and one 10,000 gallon UST.*

TABLE III-E6. Results of Annual Site Assessments for Stormwater Pollution Prevention Plan Implementation .		
FACILITY	**Calendar Year 2003**	**Calendar Year 2004**
Potomac-Rock Creek; 26 acres	4. *Need to establish emergency procedures for fuel transfer monitoring and spills.* 5. *Need to schedule more frequent inspections for routine maintenance of sediment traps.* 6. *Need to secure Gaithersburg lot to prevent out- of- hours dumping.* *7. Need routine pollution prevention training.*	3. *At the Depot:* a. *Material and equipment storage yard needs to be cleaned up and organized. Drums are stored uncovered in this area and the perimeter of yard is overgrown with weeds that are covering materials.* *b. Asphalt grinding area needs to have barriers (straw bales) on the downhill side to prevent runoff to the stormwater facilities on-site.* *c. Elevated tar tank is no longer being used and should be removed. Need to remove obsolete and unused equipment from several of the miscellaneous equipment storage areas.* *d. Salt has been washing away from dome and need to enclose the entrance to prevent storm water from contacting materials.* *e. Need to increase the cleaning schedule for the truck wash facility, the interceptor, and the drain lines* *f. Need to continue frequent inspections for routine maintenance of sediment traps, particularly those for steam-cleaning operation and for temporary asphalt grinding/recycling area.* *g. Last employee pollution prevention training for the Gaithersburg Depot was in 2001.* *4. At EMOC:* *a. Some additional attention to general housekeeping and materials storage is needed.* *b. All new employees receive pollution prevention training as part of orientation* *5. Need for regular sweeping of paved areas to reduce grit, trash and contaminates running off site.*
Poolesville Highway Maintenance Depot Potomac-Dry Seneca Creek; 4 acres	*1. Greater care needed for routine inspections and housekeeping at public disposal areas.* *2. Need to provide more frequent maintenance of on-site BMPs--sand filter partially clogged at time of inspection.* *3. Need for routine sweeping of paved areas to reduce materials getting into storm water BMPs.* *4. Tar pot needs to be removed.* *5. Storage domars and fuel site need to be repaired.* *6. Construction of outside storage areas needed.*	*1. Repairs to fuel site and domar occurred during 2004. In early 2005, the sand filter was rebuilt with all new filter media and the oil grease separator was vacuumed and power washed.* *2. Need to increase frequency of monitoring to prevent unauthorized dumping and housekeeping at public disposal areas* *3. Need to increase regular sweeping, yard housekeeping, removal of unneeded materials, and trash pick up throughout site.*

TABLE III-E6. Results of Annual Site Assessments for Stormwater Pollution Prevention Plan Implementation .		
FACILITY	**Calendar Year 2003**	**Calendar Year 2004**
	7 Install new waste oil facility spill trays to prevent overflow/spillage. *8. No provisions for indoor vehicle washing at site. Outdoor vehicle washing requires permit.* *9. Routine pollution prevention training needs to be offered.* *10. Pollution Prevention Team needs to be updated to identify responsible parties.*	*3. Tar pot needs to be removed.* *4. Storage domars need to be repaired or replaced.* *5. Fuel site needs the unleaded gas UST replaced.* *6. Construction of outside storage areas needed.* *7. Still no provisions for indoor vehicle washing at site.* *8. Need to increase the cleaning of the oil facility spill pans.* *9. Vehicle service bays do not have interior drains.* *10. Continued attention needed to maintain barriers on the downhill side of stock-piled materials and at the necessary area(s) during sand/salt mixing.* *11. There has been no employee pollution prevention training since 2001.*
Seven Locks Maintenance Center Potomac-Cabin John Creek; 19 acres	1. *Site in generally good condition. Need to continue routine inspections and housekeeping.* 2. *Out door storage bins need to have containment devices placed out front.* 3. *No provisions for indoor vehicle washing at site. Outdoor vehicle washing requires permit.* *4. Routine pollution prevention training needs to be offered.* *5. Pollution Prevention Team needs to be updated to identify responsible parties and Plan needs to be updated to reflect all on-site operations.*	1. *Need to increase routine house keeping, daily site inspections and sweeping the yard.* 2. *Out door storage bins need to have containment devices placed out front.* *3. Need to develop a material and chemical inventory.* *4. Need to develop a plan for an indoor vehicle wash area with appropriate drain system. Vehicle washing is now being done outdoors* *5. Site would benefit from periodic paved area sweeping and regular trimming of brush and growth around perimeter of yard.* *6. There has been no employee pollution prevention training since 2001.* *7. Covered outdoor storage area(s) and small equipment storage bins or trailer needed.*
Silver Spring/ Brookville Road Service Park Potomac-Rock Creek; 18 acres	1. *Vacuum truck dewatering area still needed.* 2. *Need for more routine inspections and housekeeping* *3. Routine pollution prevention training needs to be offered.* *4. Pollution Prevention Team needs to be updated to identify responsible parties and Plan needs to be updated to reflect all on-site operations.*	1. *Vacuum truck dewatering area still needed.* *2. Have removed outside hoses to prevent outside vehicle washing* 2. *Continued need for routine housekeeping and sweeping the yard.* *3. Salt ha been washing away from dome and need to enclose the entrance to prevent storm water from contacting materials.* *4. Pollution Prevention Team needs to be updated to identify responsible parties and plan needs to be updated to reflect all on-site operations* *5. Fleet Maintenance needs more*

TABLE III-E6. Results of Annual Site Assessments for Stormwater Pollution Prevention Plan Implementation .		
FACILITY	**Calendar Year 2003**	**Calendar Year 2004**
		frequent inspections of storm water facilities on-site *6. No employee pollution prevention train since 2002.*
Solid Waste Transfer Station/Materials Recycling Facility Potomac-Rock Creek; 43 out of 52.5 acres	1. *Outfall specific as well as area assessment provided.* 2. *General comment to continue with current routine cleaning and maintenance of inlets, storm drains, and general housekeeping.* *3. During 2003, pollution prevention training provided for County site manager and contractor representatives Operations contractors at the Transfer Station, Covanta Energy and Maryland Environmental Service, also have their own environmental and safety training programs.* *4. Structural damage to storm water inlets identified in 2003 inspections has been put out for bid to accomplish repairs in the spring of 2004.* *5. Pollution Prevention Team needs to be updated to identify responsible parties.*	*1. Quarterly inspections of all outfalls and BMPs on site.* *2. Generally good and well-kept condition of site, outfalls, and BMPs.* *3. Some storm drains need inlet screens repaired and to be cleaned of accumulated material which is blocking water flow.* *4. Some pavement repair needed to correct ponding in a few places.* *5. Brick work repair has been completed*
Gude Landfill (closed 1982) Potomac-Rock Creek; 120 acres	1. *Outfall specific as well as area assessment provided.* 2. *Need for some trash removal.* *3. Some leachate seep repairs and drainage repairs have been performed in the past year. Additional required repairs have been identified.* *4. One contractor, Covanta Energy, and one County employee attended pollution prevention training on December 11, 2003. The contractor also has its own environmental compliance manager that routinely visits the site, does inspections and conducts a training program.* *5. Pollution Prevention Team needs to be updated to identify responsible parties*	*1. Quarterly inspections continue for all outfalls and BMPs on the site.* *2. Site remains in vegetated and stable condition.* *3. Some minor maintenance needs to be addressed on berms.* *4. Approximately six ponded areas were filled with soil and regraded in the spring of 2005 to improve site drainage.*
Oaks Landfill Patuxent-Hawlings River and Potomac-Rock Creek; 190 out of 545 total acres	1. *Outfall specific as well as area assessment provided.* 2. *Two of the storm water down chutes from the top of the landfill have had structural shifts and are degraded but still functional.* *3. One contractor, Weston Solutions and one County site manager received pollution prevention training on December 11, 2003. The leachate treatment plant contractor, Weston Solutions, Inc., also receives company safety and environmental protection training.* *4. Pollution Prevention Team needs to be updated to identify responsible parties*	*1. Quarterly inspections continue for all outfalls and BMPs on the site.* *2. Some maintenance needs on berm and by outfalls to control saplings and vegetation.* *3. Beaver damage to one of the storm water pond berms was repaired. A sunken area in the berm was filled with soil and seeded. Several low spots on the landfill surface that were holding water were filled with soil and seeded in the spring of 2005*

Co-permittee Municipal Operations

An update on status of municipal operations at the co-permittees is shown in Table III-E7. These municipalities have all contacted MDE's Industrial Permits Section to verify the need for coverage for any facilities within their boundaries. Only the Towns of Kensington and Poolesville have facilities which require coverage under the General Permit for Stormwater Discharges from Industrial Activities.

Table III-E7. Status of Co-Permittees under General Permit for Stormwater Discharges from Industrial Activities.

Municipality	Facility Name and Address	Contact Name and Title	Telephone number	Comments
Chevy Chase Village	Village Hall 5906 Connecticut Avenue Chevy Chase, MD 20915	Geoffrey Biddle Village Manager	301-654-7300	No Exposure Certification in October 2003
Friendship Heights	NONE APPLICABLE			
Town of Chevy Chase	NONE APPLICABLE			
Town of Kensington	3710 Mitchell St. Kensington, MD 20895	Michael Wojton, Director of Public Works	301-949-2424	Intend to file NOI for General Permit Coverage
Town of Poolesville	Poolesville Wastewater Treatment Plant 18901 Fisher Avenue Poolesville, MD	Wade Yost, Town Manager	301-428-8927	Have filed NOI for General Permit Coverage.
Town of Somerset	NONE APPLICABLE			

Town of Kensington

The Town of Kensington has a shop at which equipment is stored. The Town of Kensington intends of file a NOI for coverage under the General Permit. Three trash trucks are currently stored outside but all other vehicles are stored inside. From time to time there is some light maintenance at the site. Oil changes are done elsewhere, but there is a spill kit located at the shop for staff use and for Town Emergencies. Waste oil is disposed of by the vendor. There may be limited outdoor equipment washing, primarily of the pickup trucks but the Town is using the County's truck wash for the three trash trucks. There is no outside materials storage. Trucks loaded with salt for de-icing operations are stored inside. When these trucks need to be unloaded, the material is returned to either Montgomery County DPWT or SHA road operations facilities for further storage.

Town of Poolesville

The Town of Poolesville has a maintenance yard associated with the Poolesville Wastewater Treatment Plant. Trucks are stored outside on site. There is outdoor storage of mulch and gravel, although the piles are covered when not in use. The Town of Poolesville has submitted an NOI for coverage under the General Permit and has already developed a stormwater pollution prevention plan for the site.

E3. Illegal Dumping and Spills

The DEP continues to support its Illegal Dumping Hotline 240-777-3867 ("DUMP"). During the year 2004, there were 396 complaints of illegal dumping, the vast majority of which concerned bags of trash, vegetation (leaves and brush), or other unwanted materials either dumped or being stored on private or public property. Only a small percentage of these cases represented a potential for direct runoff of contaminated material into a storm drain or receiving system. Complaint resolution invariably involved removal and proper disposal of trash and debris and proper storage (i.e. under cover) of other materials.

E4. Sediment and Erosion Control

Implementing Program Improvements

The DPS received a letter from MDE on 1/12/2004 which stated in part "I am pleased to grant your request for continued delegation of erosion and sediment control authority. This delegation of authority becomes effective July 1, 2004." There were no needed program improvements identified in the MDE report.

Responsible Personnel Certification

The Permit requires the County to conduct responsible personnel certification classes to educate construction site operators regarding erosion and sediment control compliance at least three times per year. During 2004, the DPS held nine classes with 118 people in attendance. List of attendees is included on CD in Attachment A.

Earth Disturbances for Projects Greater Than One Acre

The Permit requires the County to report quarterly on earth disturbances exceeding one acre or more. Data submitted must include site name, site owner and address, disturbed area, local grading permit number, site location, and the type of development (e.g., residential, commercial, etc). During 2004, the DPS continued the required quarterly reports as EXCEL spreadsheets via e-mail to MDE. The annual results are included on CD in Attachment A.

E5. Public Education and Outreach

The DEP continues a multimedia approach for environmental outreach and education. The DEP does not have a way of directly measuring how much pollution is reduced by providing this outreach material. However, the continuing requests for this type of information and for workshops from community groups would seem to support resident interest to practice these techniques in their own backyards.

General Environmental Outreach

Within DEP, Joe Keyser continued his weekly column called "The GreenMan: Earth-friendly Gardening & Landscaping" in the Montgomery and Frederick editions of the Gazette newspapers, with a circulation of 342,794. Current and past GreenMan columns are also posted on the ***gazette.net*** website, and are developed into print and electronic factsheets by DEP for distribution to public venues, such as libraries and education centers; they are also placed on the department's website and remain among the top downloads and most visited pages on the site, which receives approximately three million hits annually. During 2004, a special effort was made to provide columns addressing Integrated Pest Management techniques, including "Inviting Toads to Your Abode" (natural predators), "Using Solar Power to Sanitize Your Soil," "A Prehistoric Solution to Modern Pest Problems," "A Corny Solution to Weed Problems," (natural pre-emergent weed suppression), in addition to other features on using native plants and natural landscaping.

The GreenMan Show on local Cable Channel 6 is available daily to more than 205,000 cable subscribers in Montgomery County, not including municipal stations, to which the show is also provided. The program won an Award of Excellence in the 2004 Pegasus Awards competition, and a 2004 Telly Award in that 25th annual competition. Watershed and water-quality specific programs during the year addressed the County's Forest Preservation Strategy, Bugs, Birds, Bats and More (natural predators), Special Protection Areas, Exploring Vernal Pools, Environmental Partners, Household Hazardous Waste, and Friends of Sligo Creek. The GreenMan Show is also available online via streaming video and as video-on-demand at g***reenmanshow.com***

Watershed Outreach

The DEP's Watershed Management Division (WMD) continued a vigorous outreach program to increase citizen stewardship to protect watershed resources. This included providing technical assistance and presentations to watershed-based community groups and cooperating with homeowner groups, non-governmental groups, and other local agencies to support partnership efforts. These cooperative efforts are most notable in the Anacostia (as part of the Anacostia Watershed Restoration Agreement) and in the Patuxent (as part of the Patuxent Reservoirs Watershed Protection Agreement).

Capital Improvement Program Projects

The WMD continues to recognize that public support is crucial to the successful implementation of watershed restoration projects and routinely holds public meetings for ongoing studies and proposed CIP projects. In addition to day-to-day management of the consultants engaged in design and construction, the CIP staff are also responsible for responding to telephone calls and inquiries about project status, direction, and erosion problems. Outreach continues to represent a significant

staff time commitment, particularly for projects in densely developed areas or involving privately-owned property. The types and number of watershed restoration project outreach activities during 2004 are included in Table III-E8.

Table III-E8. Watershed Restoration Outreach Activities during 2004.

Public Meetings

- *Rock Creek, Ken Gar SWM retrofit:* Public Meeting, May 25, 2004- 12 people
- *Watts Branch Watershed Study, Public meeting June 16, 2004- 25 people*
- Lower Paint Branch Watershed Study, Public Meeting, September 20, 2004 – 10 people
- Cabin John Creek Watershed Study, Public Meeting, July 14, 2004, 23 people
- Lower Glenmont Stream Restoration Project, Planning Board Hearing, January 15, 2004 – 10 people
- Lower Glenmont Stream Restoration Project, Stream Walk, May 11, 2004 – 13 people
- LID Conference Tour , September, 2004 – 60 people
    - Dumont Oaks Stream Restoration Project
    - Chevy Chase Bank Bioretention
    - Godwin Marsh & Beltway East SWM Wetlands

Field Meetings

- Little Falls-4, roughly 7 people each time
- Rock Creek Joseph's Branch-3, with individual homeowners
- Rock Creek, Sycamore Creek Stream Restoration- 15, mostly with homeowners, one meeting with group of 10
- Northwest Branch, Lower Glenmont Stream Restoration - 1

Telephone, mail/e-mail contacts

- *Cabin John Creek Watershed Study* - 40
- *Little Falls*- 55
- *Northwest Branch*
    - Sherwood Forest, 50
    - Lower Glenmont, 75
- *Paint Branch*
    - White Oak Library LID Project – 5
    - Lower Paint Branch – 30
- *Sligo Creek*
    - Sligo Creek Rec. Center LID Project – 5
    - Dennis Ave. LID Project – 5
- *Rock Creek*
    - Rock Creek, 25
    - Josephs Branch- 25
    - Stream Valley Drive- 10
    - Turkey Branch- 5
    - Alta Vista, Olney Oaks- 15
    - Sycamore Creek- 50
    - Stoney Creek SWM Facility - 5
    - Coquelin Run- 1
- *Watts Branch*- 45
- *Muddy Branch Great Seneca*- 2

Erosion complaints-21

Outreach Materials: Project Fact Sheets

Dumont Oaks Stream Restoration Project, Sycamore Creek Stream Restoration Project, Joseph's Branch Stream Restoration Project, Stream Valley Drive Stream Restoration Project

Rainscapes

In April 2003, the DEP received $29,125 in grant funding from the Chesapeake Bay Trust (CBT) Urban Watershed Restoration program to support its Rainscapes program. The Rainscapes program goes beyond the CIP to involve residents and resource users in pollution source control, water conservation, and creation of backyard wildlife habitat. From April 2003 to September 1, 2004, the DEP held five "Make and Take Rain Barrel Workshops" with 150 participants, five "Rainscapes" workshops and demonstration plantings with 80 participants, one workshop with both rain barrel making and demonstration planting for 17 participants, and provided technical assistance and funding support for a rain garden/rain barrel/butterfly garden project.

The DEP has gauged these Rainscapes efforts as successes in increasing awareness about urban stormwater problems and involvement in addressing those problems through residential lawn and landscaping practices. The six rain gardens planted under this project provided 3,425 sq. ft. of control for runoff from rooftops, mowed grass, gravel parking lots, and residential streets. The 167 rain barrels provided through the "Make and Take Rain Barrel" workshops provide storage of up to 9,185 gallons of water during each rain storm. At two of the demonstration sites, the rain barrels have been set up to provide a constant slow discharge through soaker hoses during rain events which dramatically slows the runoff rate and erosive downstream effects as well as watering the gardens.

Two of the demonstration gardens were constructed in Phase 2 municipalities, co-permittees on the County's Permit. Both the Town of Kensington and Chevy Chase Village were interested in finding ways to improve water quality in their built-out urban areas. These small municipalities are located in Lower Rock Creek. They do not have large CIP budgets to construct traditional stormwater management facilities nor do they own any unused parcels that could be easily used to site these kinds of facilities. The concept of a "rain garden" was appealing to the managers in these municipalities to improve runoff and receiving stream water quality, to create bird and butterfly habitat, and to eliminate weekly mowing and thus reduce maintenance needs. In both municipalities, the rain garden had to be approved by community boards before construction. This approval process was considered a positive feature that guaranteed maintenance after completion. Figure III-E2 provides an aerial view of the rain garden park site in the Town of Kensington, the area for rain barrels and rain garden along the historic Armory which also serves as the Town Hall, and the oak barrels which were used in keeping with the historic setting.

During summer 2004, the DEP was the featured County department at the annual meetings for the Maryland Municipal League and the Maryland Association of Counties. The theme for the DEP display was "Leadership in Environmental Innovation" and the Rainscapes program was one of three highlighted. The display featured a rain barrel and native plants to use in a typical rain garden. The questions and interest by those who stopped by the display are mirrored in the continuing interest from County residents for more rain barrel workshops and more rain garden information. Information will continue to be posted on the *rainscapes.org* web site, a partnership effort with The Potomac Conservancy. The DEP is also investigating how to document environmental benefits associated with the Rainscapes Program and other of its public outreach programs so that these efforts can be more specifically included as part of the Permit-required assessment of controls to reduce pollutants and water quality impairments.


Figure III-E2. Town of Kensington
Rain barrels and Rain gardens
Town of Kensington
Connecticut Avenue
Armory Avenue
Rain garden location (approximately)
2-cell design
Cell 1 (near pipe) 15' x 27' 405 sq. ft.
Cell 2 (between trees) 10'x 15' 150 sq. ft.
2
1

Water Quality Advisory Group

The Water Quality Advisory Group (WQAG) was created in 1995 through the Water Quality Discharge Law. The Law was necessary to provide enforcement authority against illicit discharges to the County's storm drain system. The 15 voting members represent the academic and scientific, agricultural, business, environmental, and public-at-large communities. There are 3 public agency representatives, one each from the DEP, the Maryland-National Capital Park and Planning Commission (MNCPPC), and the WSSC. The WQAG meets monthly to discuss and provide recommendations on water quality issues affecting the County. These topics have included drought, groundwater, forest conservation, erosion and sediment control and stormwater, pollution prevention, the Intercounty Connector (ICC), Chesapeake Bay Program activities, and sanitary sewer overflows. The WQAG has strongly supported the urban watershed restoration work being conducted by DEP and benefits from active participation by the public agency members who bring first-hand experience with these issues to the meetings.

In their annual report to the County Executive, the WQAG identified four **"Urgent Issues"** as requiring the continued attention of the Executive Branch:

- **Control air deposition of nutrients and other contaminants.** During 2004, the DEP organized a first-ever summit of its citizens' advisory committees to identify common issues and priorities to protect environmental health. The three committees involved were the Water Quality Advisory Group, the Energy and Air Quality Advisory Committee, and the Noise Control Advisory Board. The groups identified nitrogen and mercury deposition from the atmosphere as the sources of the most significant degradation of water and air quality in the County.

- **Conduct effective education to reduce fertilizers in urban runoff.** This outreach would focus on those who purchase fertilizers for urban and suburban lawn care. This might be at point of purchase or on product labels with cooperating large scale manufacturing companies.

- **Ensure that all direct and indirect water quality effects** are considered in transportation options through GoMontgomery Initiative and construction of the Inter County Connector.

- **Provide leadership for the WSSC** to maintain its sanitary sewer system such that sewer overflows become an infrequent occurrence and do not significantly degrade the quality of the County's streams.

County's Pollution Prevention Program

The DEP continues to make progress in pollution prevention training and awareness by providing monthly meetings and Pollution Prevention Overview Courses. The Pollution Prevention Overview course is offered to all county employees through the Office of Human Resources. Course objectives are to:

- understand the basic principles and concepts of pollution prevention in the public sector;
- understand the applicable regulations and eliminate or greatly reduce violations of these regulations;
- identify ways to reduce hazardous substances, pollutants, or contaminants; and
- develop an action plan to prevent and manage pollution.

During 2004, there were two sessions of the Pollution Prevention Overview course, with 29 staff from multiple county agencies participating in the two hour course. In addition, the DEP and DPWT conducted a "Make and Take" Rain Barrel workshop in association with Pollution Prevention Week during September. About 20 employees from 6 agencies and the County Council Office participated in this workshop with a focus on how to prevent pollution from lawns and landscaping practices.

The DEP continued to hold monthly meetings on Pollution Prevention throughout the year. The target audience was County staff from DPWT, Fire and Rescue, and MNCPPC involved in activities which may introduce pollutants into the environment. Topics covered included Pollution Prevention Program goals, Environmental Policy issues and actions, and compliance and employee training needs.

Montgomery County Environmental Policy

During 2003, the County Council and County Executive approved a resolution creating the Montgomery County Environmental Policy. The Policy required that all County Agencies and Departments develop an Environmental Action Plan (EAP) by June 30, 2004 to document existing efforts for environmental protection or improvement and also set goals for the coming year. The resolution created an interagency steering committee called the Environmental Policy Implementation Task Force (EPITF) to identify a framework for tracking progress from year to year. The EPITF developed an Issues and Action report to identify actions that could be taken by the agencies and departments as a means to assist these organizations in the development of their EAPs. These priorities issues were 1) Energy, 2) Pollution Prevention, 3) Environmental Preferable Purchasing, and 4) Green Buildings practices.

An important aspect of the Montgomery County Environmental Policy is that it is directed at improving and coordinating the environmental stewardship of County departments and agencies that have budget review and approval by the Montgomery County Council. It is the intent of the Environmental Policy to initiate activities that improve the environmental sustainability of our daily activities by raising the consciousness' of all county agencies, departments, and employees that their actions have environmental consequences. Accordingly, this Policy establishes a framework for all Montgomery County agencies and departments to achieve improvement in the implementation of program measures to address issues of public health, environmental resource management and

environmental protection. These actions will promote a comprehensive and sustained effort by the County to make measurable progress as environmental stewards.

The FY04 Environmental Action Plans provide a commitment of each department's or agencies' environmental concerns and goals. While not all departments and agencies are equal in their impact on the environment, each did show a commitment to reduce negative impacts on the environment and to improve over the next year and beyond. Selected highlights of the environmental action plans include:

1. 31 departments and agencies submitted environmental action plans.
2. 31 departments and agencies appointed environmental coordinators.
3. Quarterly meetings were held to promote awareness and exchange ideas.
4. All agencies will implement the "Office Wise Energy Program".
5. Over 90% of departments and agencies will implement Office Waste Reduction Program.
6. Over 90% will institute an environmentally preferable purchasing policy.
7. Over 90% will develop pollution prevention programs.
8. Over 60% are committed to developing policies for fleet and vehicle use.
9. Of the agencies and departments that manage buildings, all committed to promote green building practices.
10. Of the agencies and departments that manage fleet and equipment and body shops, all committed to reduce pollution.

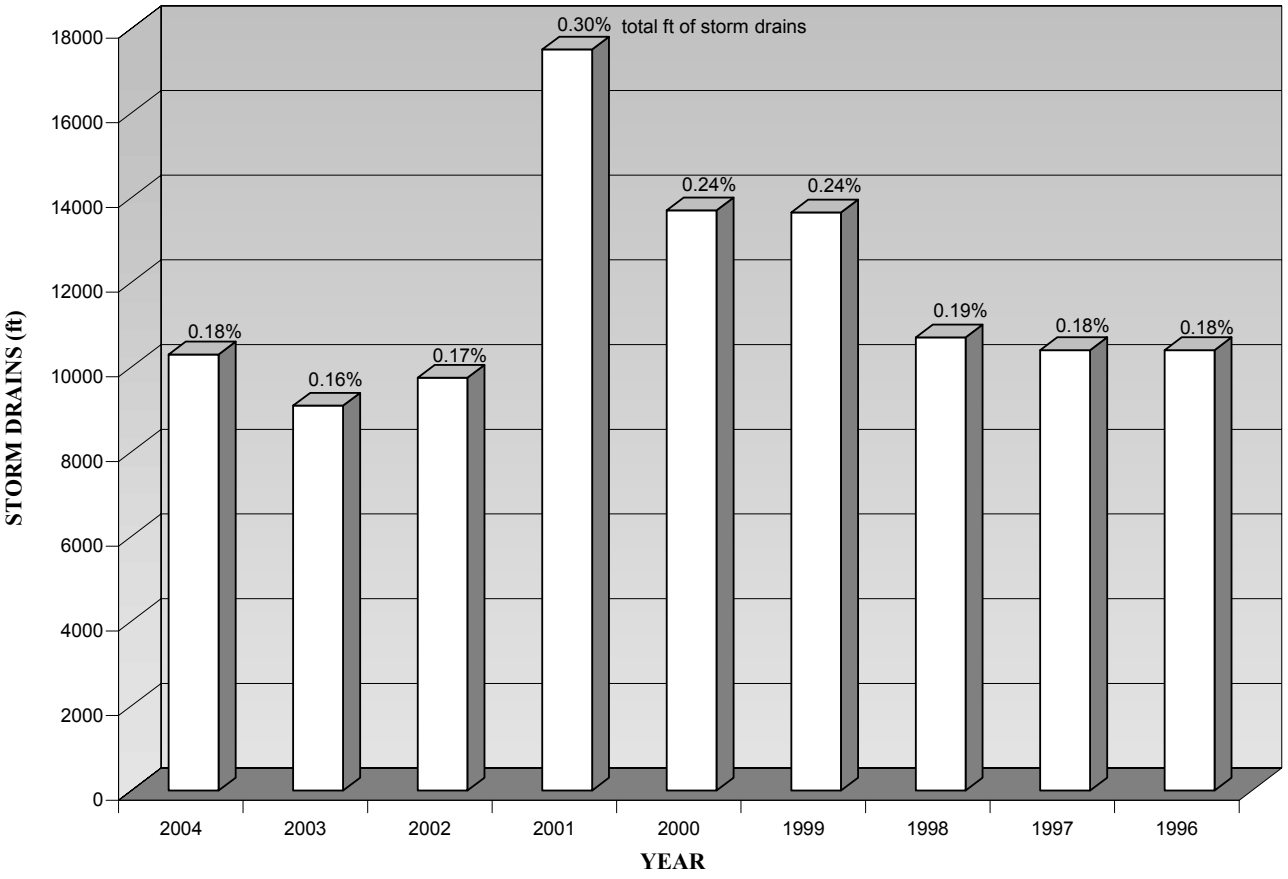
E6. Road Maintenance and Pollution Prevention

Storm Drain Cleaning

During 2004, the DPWT-Division of Highway Services removed accumulated material from a total of 10,296 feet of storm drains, representing about 0.18% of the estimated 5.72 million total feet of County storm drains. The amount cleaned per year has decreased slightly since the County's first permit was issued in 1996 as shown in Figure III-E3. There is no annual schedule for storm drain maintenance, with the countywide program being complaint driven to remove clogged inlets or drainage problems on public or private property. At the current maintenance rate of less than 0.5% of the system per year, it will take 200 years for a first pass of the entire system.

The current storm drain maintenance program is funded at about $2 million per year from an ad valorem tax. The amount of material removed and the actual expenditures for maintaining the County's system are not tracked.

Figure III-E3. Total Linear Feet of Storm Drains Cleaned from 1996 through 2004.



Co-permittee Storm Maintenance Program

The Village of Friendship Heights, the Town of Kensington, and the Town of Poolesville own and maintain their own storm drain systems. For the Village of Friendship Heights, there were no storm drain repairs needed during 2003 and 2004.

Town of Kensington

The Town of Kensington's storm drain system was constructed by the WSSC, the Maryland State Road Commission (now State Highway Administration-SHA), the Town of Kensington, and other, unknown parties. The Town of Kensington retained ownership of the storm drain system when WSSC relinquished maintenance responsibility in 1968. The Town of Kensington's storm drain system drains either into Silver Creek (a tributary to Rock Creek) or connects to either the SHA or to the County's system. During the mapping process, the Town began documentation of the condition of its system.

The Town of Kensington is developing a Storm Drain Maintenance Plan, using an approach suggested by the County. The acquired information will be compatible with the County's existing system. As of July 1, 2005, a GIS inventory had been completed to document the storm drain system. A portion of the system had been video-taped to document existing conditions and suspect connections with additional analysis of the tapes still to be completed.

The approach was developed to achieve the following goals.

1. Provide a plan of action as required under NPDES Phase 2 to work with Montgomery County to search for illegal connections and to identify "Hot Spot" locations. The plan of action will be partially complaint driven.
2. Document the extent of the system by summer 2005.
3. Evaluate the condition of system, develop maintenance procedures, and prioritize repairs if required.
4. Develop and implement BMPs for pollution prevention and control

The electronic mapping has been used to identify "Hot Spot" locations, i.e. storm drains near potential sites for spills. During 2003, the County conducted outfall screening at the Town's outfalls with the tested parameters falling within acceptable limits. The Town is working with the DEP to evaluate potential sources of illicit discharges, in particular that part of the Town with a number of automotive repair facilities.

The inventory and condition data that has been collected will be reviewed by the Town of Kensington Director of Public Works to identify actions or structures requiring maintenance or repair. The maintenance plan will include periodic inspections, setting priorities for maintenance, repair or replacement, and developing p a schedule of repairs and/or replacement of structures in a multi-year CIP.

The Town of Kensington staff will continue to review system for possible BMPs. The Town will consult with appropriate County and State agencies and retain consultant for implementation if needed. The Town has already installed a rain garden on a park site to provide treatment of adjacent

residential areas. The Town plans to add rain barrels and rain garden at the Town hall during the fall of 2005 for additional runoff quality treatment.

Resources

The Town Council has approved funds to start the process for developing and implementing the storm drain maintenance plan and is aware that this is an ongoing requirement. The Town will continue to work with Montgomery County and other municipalities for information and idea sharing. The Maryland Municipal League Public Works Official Association is also expected to be a good resource for ideas.

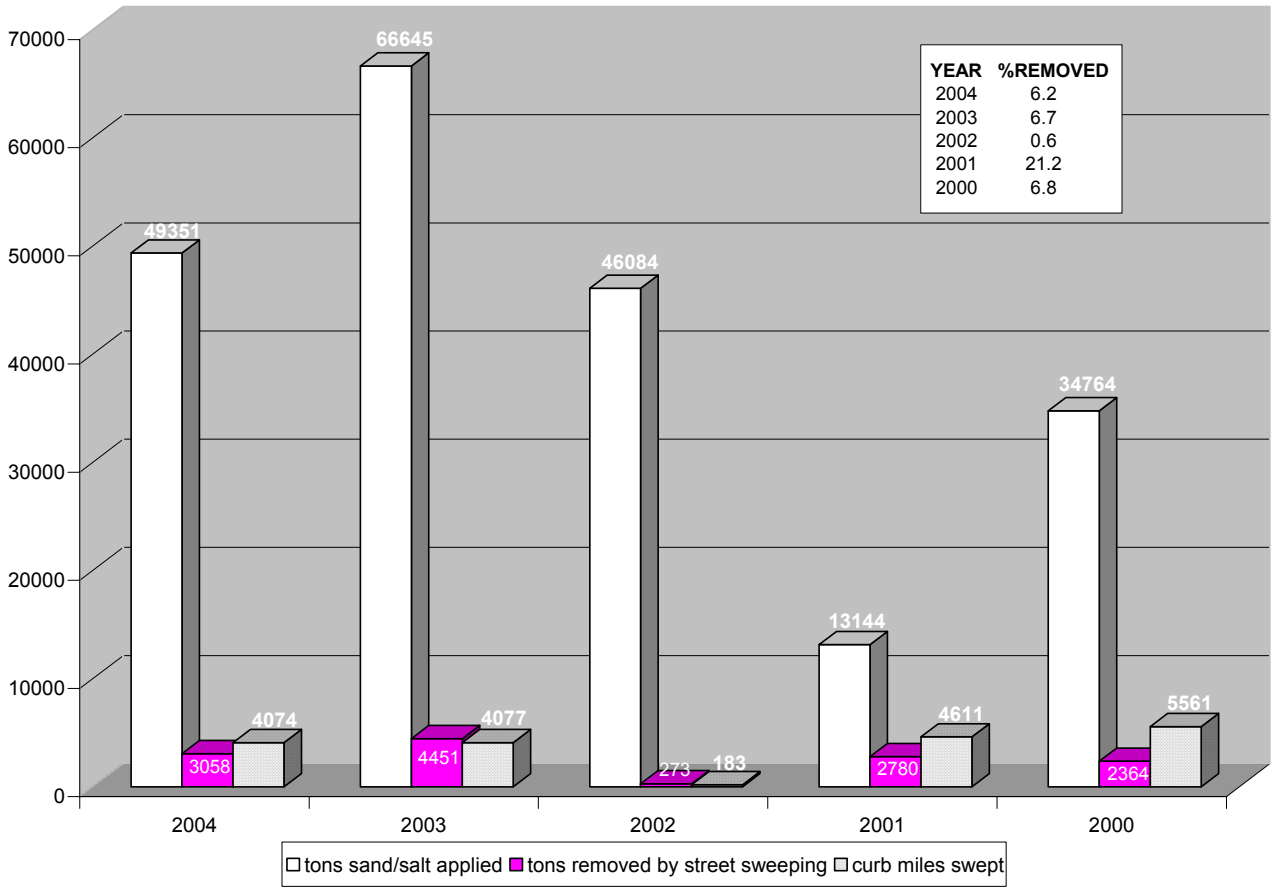
Street Sweeping

In the past, street sweeping was done largely to address aesthetic needs rather than environmental needs. A comparison of amount applied to amount removed is shown in Figure III-E4 for the years 2000 through 2004. For the years of 2000 through 2004, the DPWT applied an average of 42,000 tons of de-icing materials per year on County-maintained roads. This does not include amounts applied to State-maintained roads (including the interstates), federal facilities, or in privately-maintained areas. During those years, an average of 2,600 tons was collected through the once-per-year street sweeping program, about 6% of the total applied. This period includes the year 2002, when only arterial roads were swept because of severe budget limitations, and the year 2001, which had much below normal winter precipitation and only about a third of the average amount of de-icing materials were used.

In FY03 and FY04, the DEP agreed to cost-share for vacuum-street sweeping as a BMP to reduce the amount of solids that could enter County-maintained stormwater management facilities. The DEP requested that areas with stormwater management ponds and dense urban development should be swept first, including those in the Anacostia and Watts Branch watersheds.

Beginning in 2003, the DPWT required the sweeping contractor to keep track of the total amount of material swept by route, to translate into pounds collected per curb mile per area in the County. This has allowed comparison across the county and was useful in identifying those areas which are apparently the "dirtiest". These should be the areas swept first during the sweeping cycle or swept more frequently than once a year for greatest cost-effectiveness of material removal. Condensing the sweeping cycle into as short a time frame as possible is also a factor to prevent multiple rainfalls and traffic from dissipating the materials into the storm drain system before the once per year scheduled street sweeping takes place.

Figure III-E4. Tons of Sand/Salt Applied for Road De-Icing Compared to Material Removed by Street Sweeping.

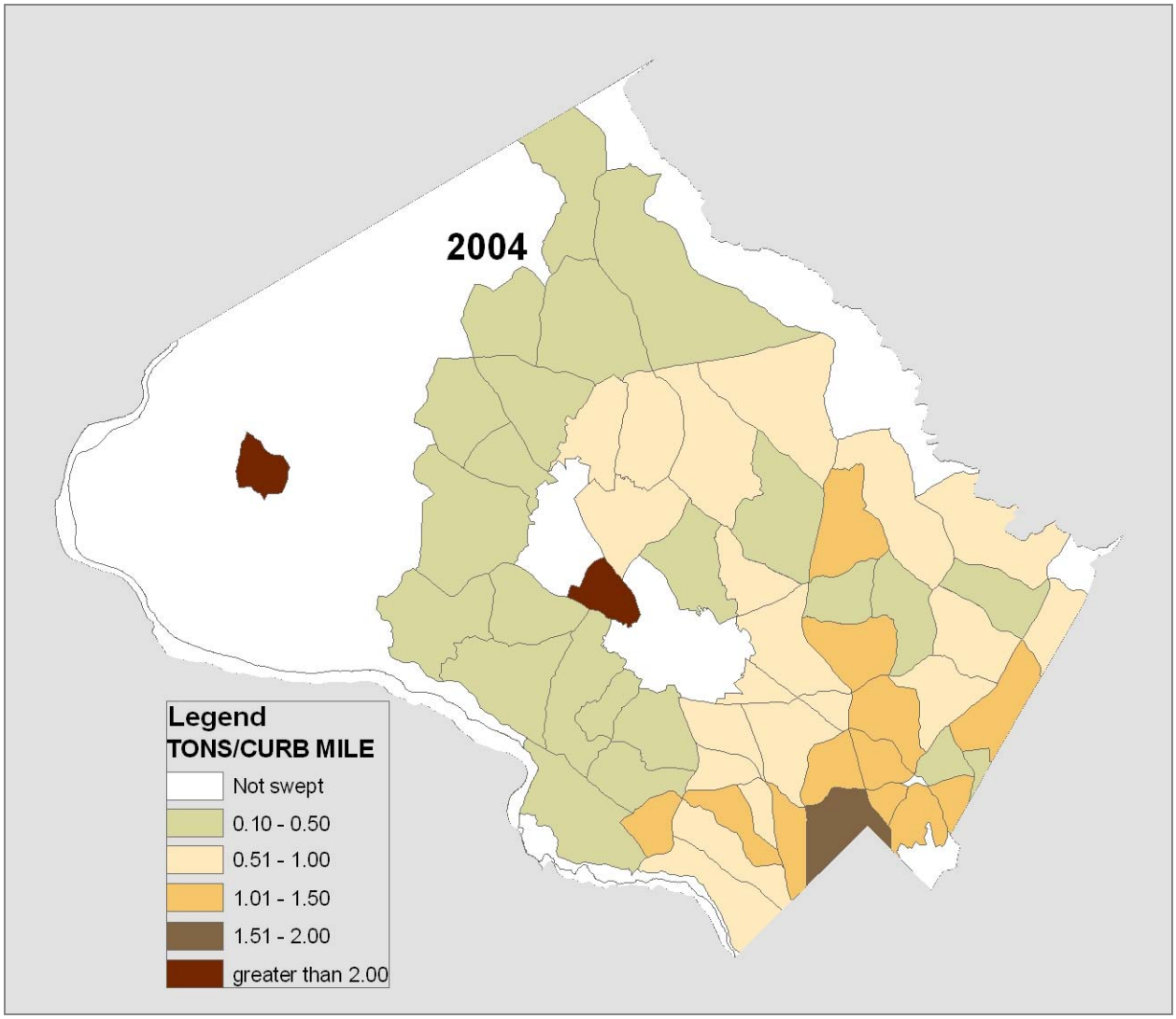


In the Annual Report for 2003, data analysis on tons of material removed by area in county and start date showed that in general, the areas in the southern, more urbanized parts of the County had the highest per curb mile collection rate regardless of sweep start date. Materials removed by area during 2004 are shown in Figure III-E5.

There were some exceptions to this pattern, such as the area north of the Town of Poolesville in western Montgomery County. In 2003, this was among the last areas swept but in the highest category for material collected per curb mile. During 2004, the DPWT included this early on in the sweeping schedule and also had the sweeping begin in late March rather than April. The sweeping of all residential and arterial roads was completed in July rather than going into August as in 2003.

In both years, areas in the southern part of the County tended to show higher amount collected per curb mile, regardless of start date. These will remain as priority areas for sweeping. Additional recommendations include shortening the sweeping cycle into less than the five months currently allotted, beginning as early as possible in March to collect material before it is washed away, and to consider multiple sweepings in those areas which visually appear to have the greatest amounts of accumulated material.

Figure III-E5. Tons of Material Removed by Street Sweeping from March through July 2004.



E7. Integrated Pest Management

Montgomery County is required to examine the use, control, and reduction of herbicide, pesticide, and fertilizer for all departments. The County continues to implement its Integrated Pest Management (IPM) program at county owned facilities by the DPWT-Division of Operations.

Table III-E9 shows pesticide use at facilities maintained by the DPWT-Division of Operations for calendar years 2004 and 2003. There was a significant reduction in the use of Maxforce Gel and Boric Acid this past year. The County added two new facilities this year, the Strathmore Music Center and the Damascus Recreation Center. These two facilities totaled 225,000 square feet bringing the total number of square feet covered under the Structural Pest Control Program to 1,600,000.

There were no fertilizers applied at any of the 98 facilities comprising 250 acres that were in the County landscaping program during 2004. The landscaping inventory also increased from 230 acres to 250 acres as a result of the addition of these two facilities.

The County Pest Control Contractor and County Property Managers continue to work with facility occupants to stress the need for proper sanitation measures to control pests. Routine inspections are carried out to identify possible sources of infestation which are immediately corrected. Pesticides are used only when all other measures have failed.

Table III-E9. Pesticide Usage at County-Maintained Facilities for 2004 and 2003.

Purpose	2004	2003
Landscaping No fertilizers were applied.	*250 acres at 98 facilities* Roundup 10 gallons (undiluted)	*230 acres at 96 facilities* Roundup 10 gallons (undiluted
Structural Pest Control *Outside use only.	*1,600,000 sq ft at 77 facilities* Maxforce gel 2.1 (lb) Boric Acid 24.3 (lb) Roach glue boards 559 ea. Maxforce roach baits 186 ea. Drax ant gel 3.1 (lb) Wasp spray (19 cans) 28.5 (lb)* Delta Guard (granules) 600 (lb)* Talon-G (rodent bait) 10.3 (lb)	*1,375,000 sq ft at 75 facilities* Maxforce gel 18.75 (lb) Boric Acid 59.00 (lb) Roach glue boards 187 ea. Maxforce roach baits 482 ea. Drax ant gel 10 (lb) Wasp spray (32 cans) 48 (lb)* Delta Guard (granules) 500 (lb)* Talon-G (rodent bait) 12.25 (lb)

F. Watershed Restoration

The County is continuing its systematic assessment of water quality, stream resource conditions, and habitat modification within all of its watersheds. Since 1996, the County has completed assessments and identified restoration opportunities in about 40% of its total watershed area, including all of the urban watersheds required in its first Permit.

During 2004, the County began the watershed restoration inventory in the Great Seneca Creek and Muddy Branch watersheds as cooperative efforts with the USACE and the City of Gaithersburg. These areas represent roughly one-third of the total County land area and include drainage from the densely developed areas of Gaithersburg and Germantown.

Table III-F1 summarizes the status of the DEP's watershed restoration efforts through 2004. Total cost through December 2004 (including State and Federal cost-share funding) for watershed studies completed or ongoing is $6.077 million and for projects completed is $7.310 million dollars.

Table III-F1. Implementation Status of County's Watershed Restoration Projects

PERIOD	1996-2001 (1st permit)	2002-2003	2004
Watershed Studies completed or ongoing (sq. miles)	191.2 (completed)	28 (completed)	188.3 (ongoing)
Retrofits Completed (acreage)	493	166	69
Restoration Projects Completed (linear miles)	5.65	2.6	0.75
COST (million $)	6.694	1.629	5.064

F1. Watershed Screening

The DEP continues its countywide biological and physical habitat monitoring to identify and evaluate water quality problems by subwatershed. The DEP is in its second round of countywide monitoring of all subwatersheds. During 2004, the consulting firms of Coastal Resources, Inc. and RKK, Inc. monitored some stations included in this analysis. Coastal Resources, Inc. conducted monitoring in conjunction with the ongoing Intercounty Connector Study while RKK, Inc. monitored stations associated with DEP stream restoration projects.

There were 44 biological monitoring stations in four watersheds: Little Paint Branch, Lower Patuxent River, Northwest Branch, and Paint Branch. Of these, six (14%) had impairment in both fish and benthic macroinvertebrate fauna. The six stations shown in Table III-F2 were identified from the biological monitoring and stream habitat assessments as having impairment other than that which could be attributed to habitat conditions alone. Most of these stations showed pollution-tolerant fish or benthic species and riparian buffer disturbances in or above the station. Two of these stations, NWGT201 and PBPB104, are located within areas where the county is pursuing stormwater retrofits and possible stream restoration projects. The remaining four stations will be investigated as part of the County's illicit discharge screening program for 2006.

Extremes in rainfall can always produce stressful conditions in County streams and the years 2002 and 2004 had opposite extremes in rainfall. The 2002 drought impacts were still visible during 2004 in the fish community within some of the smaller tributaries, where the dominant fish populations were pioneering species. These tributaries were severely depleted of ground water recharge during the drought. Conversely, in 2004, there was 3.14 inches of rain above average for the DC area. Within that year, months June and July were observed to have the highest above normal rainfall totals that may have increased flash flooding in the county streams. Flash flooding can result in a higher potential for stream degradation (especially in newly restored streams), larger probability for sediment deposition from bank erosion, and higher stream velocities due to poor stormwater controls. Northwest Branch and Paint Branch (with the largest amount of urbanization of those monitored during 2004) showed the greatest adverse physical changes from the increased runoff.

Little Paint Branch (4 Stations)

Results for the Little Paint Branch Watershed are shown in Figure III-F1. Four stations were sampled for fish. The DEP monitored three of these stations for benthic macroinvertebrates. The benthic sampling at the fourth station (LPLP205) was sampled by Coastal Resources, Inc., a consultant for the State Highway Administration. Their results did not include habitat ratings and therefore were not used for this comparison. No stations scored good to excellent for both habitat and biological conditions for both faunal groups. Two stations, LPLP202 and LPLP204, scored poor for the benthics and fair for fish while having a good habitat condition. One station, LPLP101, scored poor for both fish and bug conditions but had a fair to good habitat, and was designated for investigation during 2005. Station LPLP202 has biological impairments due to stream habitat constraints and riparian buffer disturbances. It was noted that a part of this station was found to have remnants of an old concrete substrate/swale that may be contributing to the biological degradation.

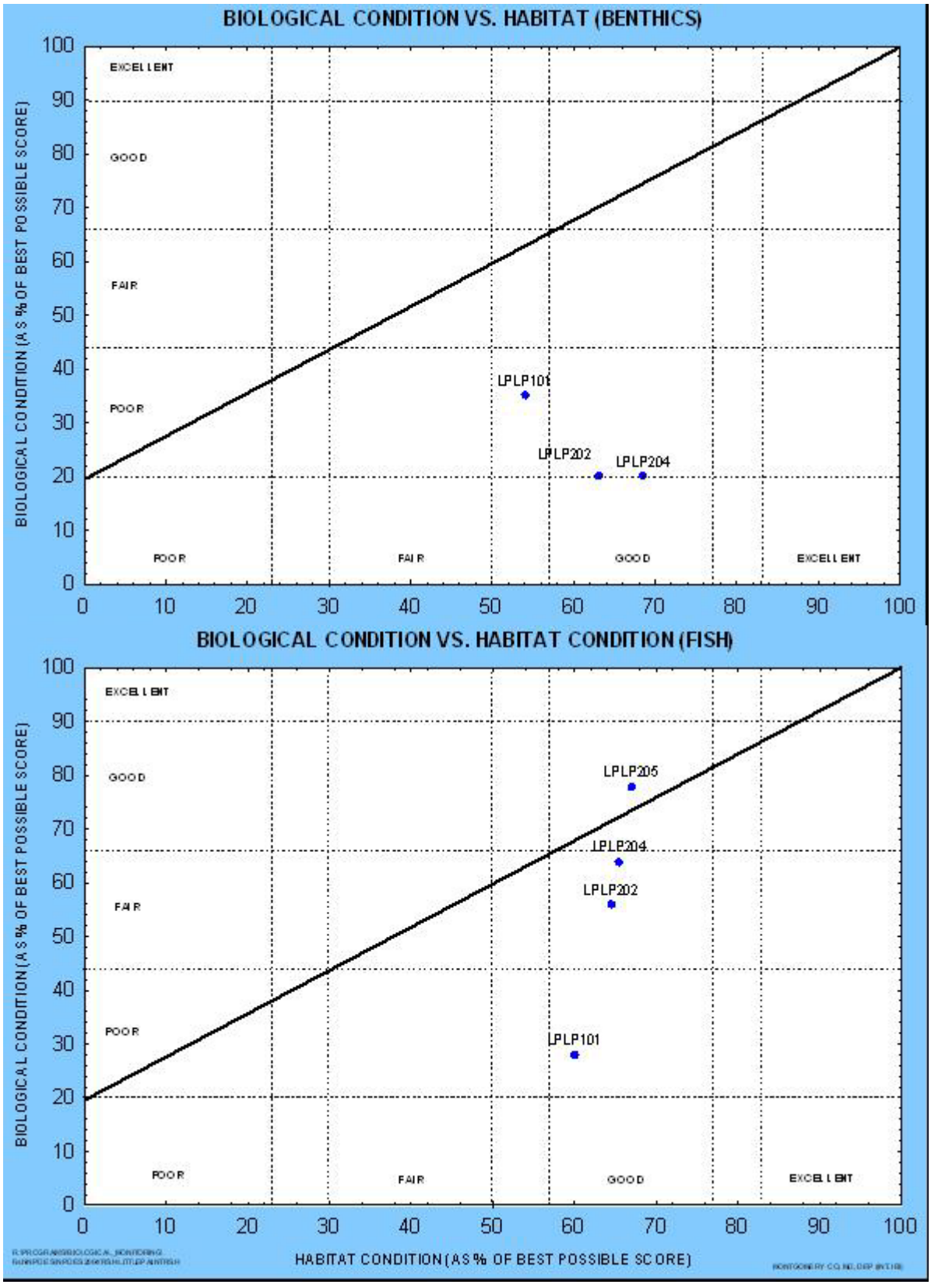
Table III-F2: Biological Monitoring Stations (2004) with Possible Impairment Not Associated With Long-Term Physical Stressors.

WATERSHED STATION	LOCATION and POSSIBLE CAUSES OF IMPAIRMENT	FOLLOW UP ACTIONS
LOWER PATUXENT WATERSHED		
LPPR206	Lower Patuxent River, upstream of Tucker Lane stream crossing. Heavy deposits of fine sediment. DBS, SSE.	Research possible causes of sediment deposits (i.e. insufficient controls at construction sites)
NORTHWEST BRANCH WATERSHED		
NWGT201	Station located South of Brookside Nature Center off of Glenallan Avenue. LTP, Possible IWT, DBS. Possible impairment coming from Brookside Garden's Pond. It was found that summer dissolved oxygen very low (48%)	The Glen Allen tributary is under investigation for stream restoration. Summer deployment of a temperature logger to monitor water temperatures and also a field visit to determine what (if any) impacts are originating from Brookside Garden's pond will also be conducted.
LITTLE PAINT BRANCH WATERSHED		
LPLP101	Little Paint Branch Mainstem, Fairland Road. DBS, ESC, minimal riparian buffer due to housing, and degraded habitat cover. LTP, IWT possibly.	Investigate why a part of the station has concrete substrate. Look into conducting an educational riparian buffer seminar for the residents near the stream.
LPLP202	Little Paint Branch Mainstem, Briggs-Chaney Road. LTP, possible point sources may be large automotive company near Tanglewood Tributary. Another source may be from inline pond at end of Beethoven Way.	Field investigation to analyze water chemistry above station concentrating on Outfalls draining into stream.
PAINT BRANCH WATERSHED		
PBWF101	Located on the West Farm Tributary near the Prince Georges and Montgomery County line, sediment deposition as well as embeddedness problems.	Field investigation to analyze water chemistry above station concentrating on Outfalls draining into stream, as well as determine upstream sediment impairment.
PBPB104	Tributary located South of Stewart and April Lanes.	Restoration has been delayed in 2004 due to existing infrastructure constraints but is slated for restoration in 2005.

Legend for Possible Causes of Impairment:

Winter/Spring **H**igh **F**lows	=	WHF
Summer **H**igh **F**lows	=	SHF
Suspended **S**ediment **E**vent	=	SSE
Drought **L**ow **F**low	=	DLF
Increased **W**ater **T**emperature	=	IWT
Degraded **B**enthic **S**ubstrate	=	DBS
Entrenched **S**tream **C**hannel	=	ESC
Short **T**erm **P**ollutant Event	=	STP
Long **T**erm **P**ollutant Event	=	LTP

Figure III-F1. Identifying Impairment for other than Physical Habitat in Little Paint Branch during 2004. *Line shows expected direct correspondence between biological and habitat conditions*



Lower Patuxent Watershed (12 Stations)

Results for the Lower Patuxent watershed are shown in Figure III-F2. Of the 12 stations, two (LPRG109 and LPRG110) were monitored for benthics by Coastal Resources, Inc. but both sites lacked habitat scores and are therefore not shown in this comparison. Stations LPRG102 and LPRG103 were not monitored for fish due to their small size. Electrofishing would have caused too much stress on the ecosystem. Station LPPR206 scored "Fair" for both benthics and fish and the habitat scored "Good" in the benthic season but "Fair" in the fish season. Heavy deposits of fine sediment, embeddedness, and lack of instream habitat were the major problems at the LPPR206. Seven stations scored "Poor" for fish. Six of these stations, however, as well as one station not monitored for fish, scored "Good" for benthic macroinvertebrates. These stations scored "Good" for habitat during both monitoring seasons. The seven "Poor" fish stations scored "Fair" or "Poor" in 1997 and 1999. The low scores are attributed to low species diversity and small fish populations; this may be due to the small size of the streams and small drainage areas. Fish blockages could be another factor in low fish IBI scores. The Environmental Stewardship technical review for the ICC initially identified 16 fish blockages in Rocky Gorge. After subsequent data screenings, only one fish blockage was proposed for removal. In addition, several monitoring stations are close to WSSC right-of-ways which may form fish blockages at stream crossings. A walk and inventory of the WSSC property and stream crossings has been recommended.

Northwest Branch Watershed (22 Stations)

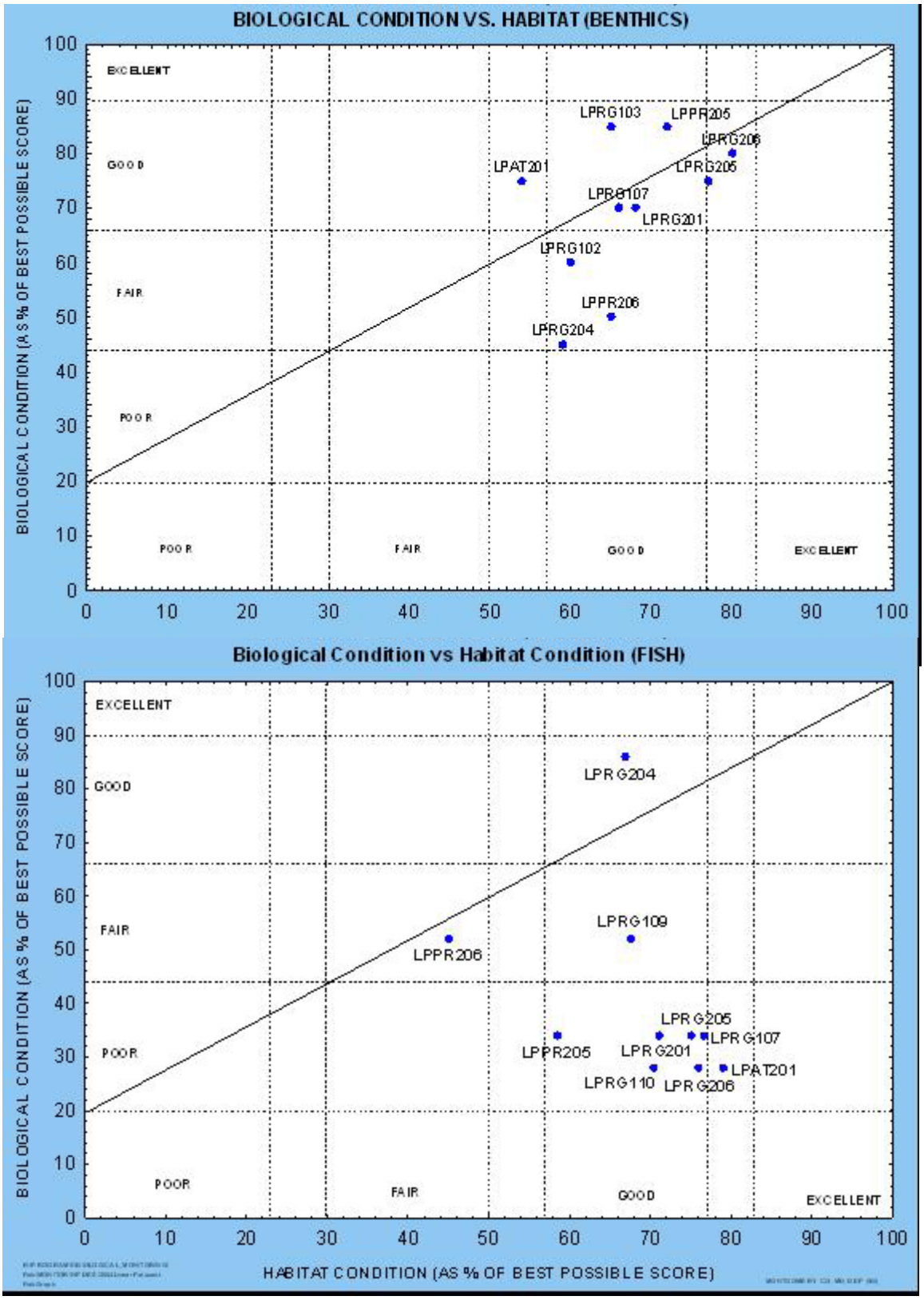
There were 21 stations monitored for benthic macroinvertebrates and 22 stations monitored for fish. Of these, six stations were monitored by RKK Consultants as part of the County's stream restoration project monitoring. Information about the restoration monitoring stations are shown in Table III-F3.

Table III-F3. Restoration Project Locations and Status for Impaired Stations

Station	Location	Restoration Project Status
NWRF204	Alexander Manor Drive	Under design
NWLT101	Lamberton Drive	Completed, Spring 2001, impacted by stormwater runoff
NWLF202	Norwood Road	Under design
NWBF202	Batchellors Forest Road	Under design
NWND201	Northwood Terrace	Completed, Fall 2003, stormwater management needed
NWLR102	Lockridge Drive	Completed, 2001, stormwater management needed

Figure III-F2. Identifying Impairment for other than Physical Habitat in the Lower Patuxent Watershed during 2004

Line shows expected direct correspondence between biological and habitat conditions.



Results of the biological and habitat monitoring are shown in Figure III-F3. Two stations, NWBF203A and NWBF203B, were monitored only for fish while station NWLR102 was monitored only for benthics. No stations scored any biological or habitat condition as excellent.

Of the seven stations with impairments to both fish and benthic communities, (NWBP201, NWBP205, NWGT201, NWLT101, NWND201, NWNW209, and NWRF204) only 1 of them, NWGT201, showed impairments from other than habitat conditions. This station, located on the Glen Allen tributary, exhibited extremely low dissolved oxygen readings, 4.43 mg/L and 48% saturation during the summer sampling period. Potentially, Brookside Garden's pond may be contributing to the low dissolved oxygen in the stream during the summer months. Follow up monitoring of this station will include a summer deployment of a temperature logger to monitor water temperatures and also a field visit to determine what (if any) impacts are originating from Brookside Garden's pond. The Glen Allen tributary is under investigating for stream restoration.

The other six stations were found to have impairments due to habitat limitations to the biological community. Station NWLR102 is lacking epifaunal substrate for colonization of less tolerant benthic macroinvertebrates and benthic/riffle dominant fish species. Riparian disturbances from nearby housing/roads, sediment deposition, embeddedness, bank instability, and low protective bank covers may be impairing stations NWRF204, NWND201, NWLT101, NWLF202, and NWBF202.

This is the second documentation that station NWND201 was listed as having impairment to both biological communities. In the 2002 NPDES report, NWND201 was listed as having impairments to the biological community due to unstable banks and sediment problems. As stated in the 2002 report, this station is in an area of stream where stream restoration will occur with a goal to address these physical impairments.

Paint Branch Watershed (5 Stations)

During the 2004 monitoring season, five stations were monitored for benthic macroinvertebrates and fish in the Paint Branch watershed. Results are shown in Figure III-F4. Stations PBPB104, PBPB309B, and PBPB310A are being monitored as part of the Permit-required discharge characterization. More detailed results of that monitoring have already been presented in Section III-D1.

All five stations scored poor in the index of biological integrity for benthic macroinvertebrates (BIBI). All sites scored low suboptimal to marginal for the parameters of sediment deposition and embeddedness. This indicated high levels of sediment on the bottom substrate which would be used by the benthic community. Three of these stations PBPB309B, PBPB310A, and PBPB311 scored good for the index of biological integrity for fish (FIBI). Station PBWF101 received a fair score for FIBI and PBPB104 scored poor. In both spring and summer habitat assessments, overall habitat condition was good for all sites. PBPB104 and PBWF101 were the two stations considered to have impairment due to other than habitat and designated for follow up monitoring in 2005.

Figure III-F3. Identifying Impairment for other than Physical Habitat in Northwest Branch during 2004. ***Line shows expected direct correspondence between biological and habitat conditions.***

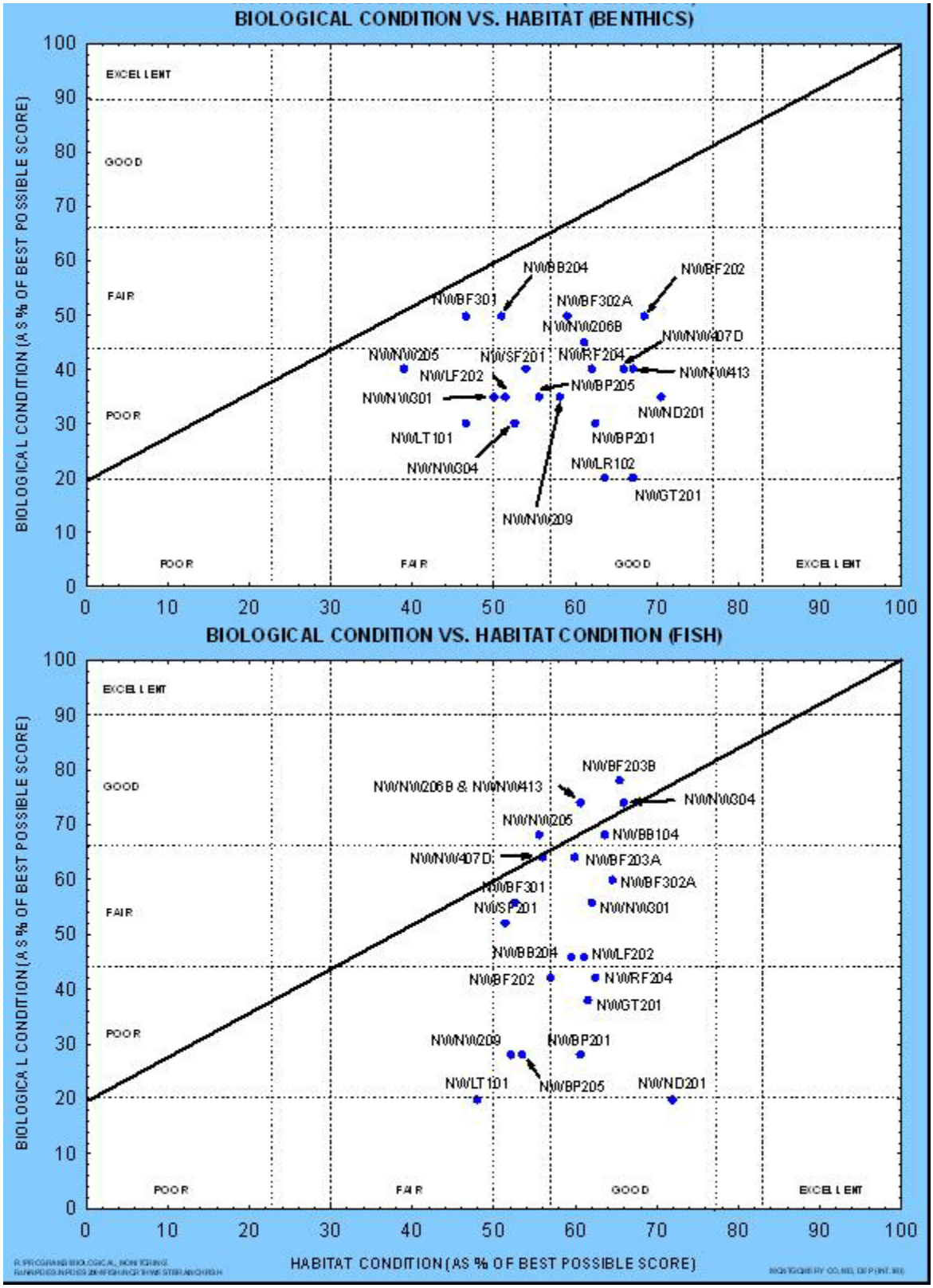
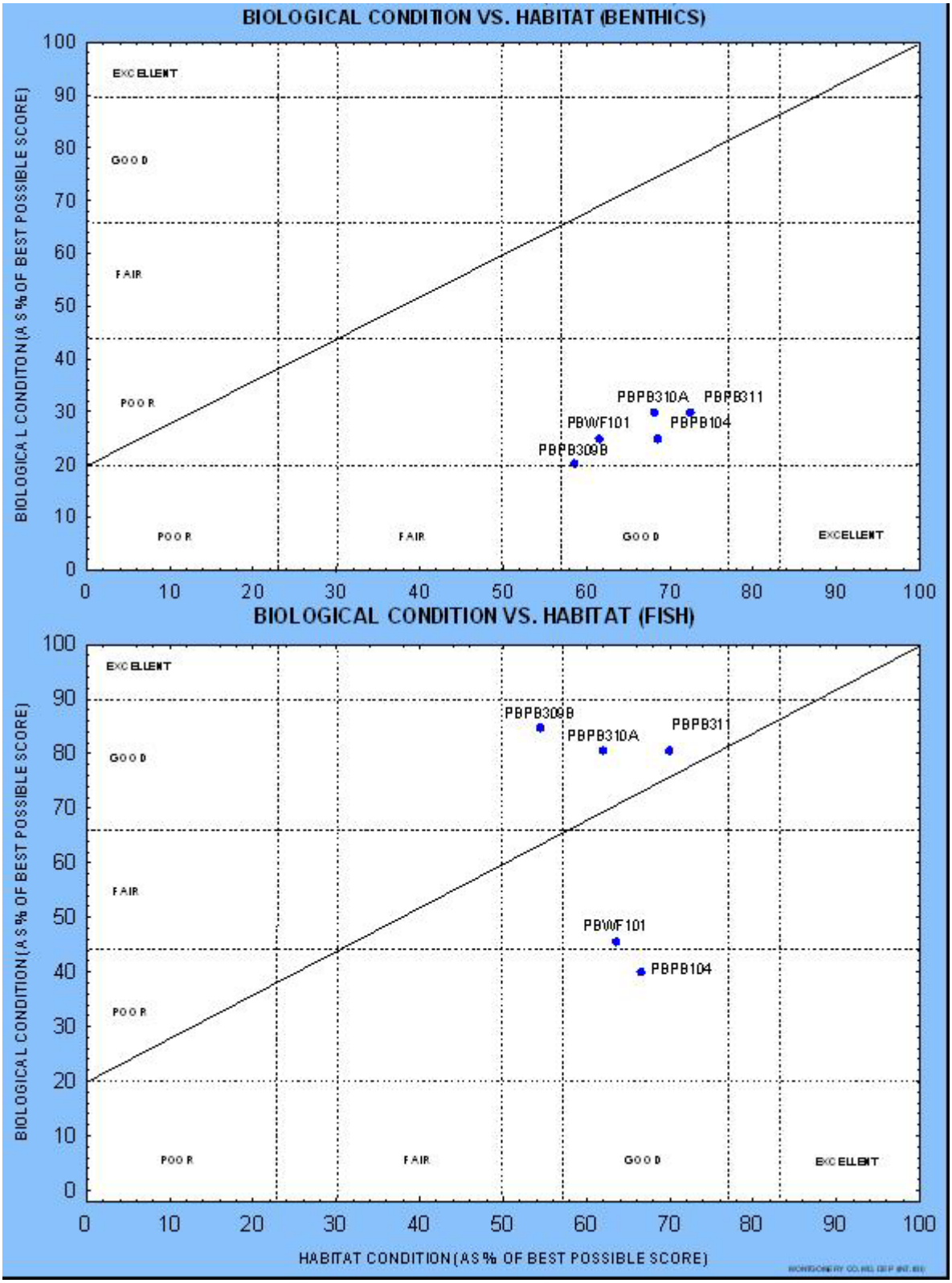


Figure III-F4. Identifying Impairment for other than Physical Habitat in Paint Branch during 2004. *Line shows expected direct correspondence between biological and habitat conditions.*



F2. Selected Restoration Watershed

Restoration Goal

The Permit requires the County to track progress and evaluate effectiveness of implementing programs and projects to restore a drainage area "equaling ten percent of Montgomery County's impervious area that has not been treated to the maximum extent practicable". The revised analysis for 2004 is shown in Table III-F4.

Compared to the data for 2003, there was an apparent decrease in acres under stormwater management. This was the result of a previous discrepancy in the drainage area inventory which did not accurately separate acreages for pre-treatment structures from combined acreage to the larger downstream structure. However, the acreage in the selected restoration watershed is still greater than ten percent of the uncontrolled impervious surface acreage.

Table III-F4. Impervious Surface Analysis for Watershed Restoration Goal

Total County Acres		324,552
Total Acres of Impervious Surface	(2004)	33,339
	(2003)	30,805
Total Acres of Impervious Surface minus exclusions	(2004)	17,174
	(2003)	14,117
10% Goal in Acres	Revised 2004	1,717
Turkey Branch		2,434
Excluded Areas: (total area, not just impervious area; in acres, except for State Maintained Roads)		
Rural Zoning (RC, RDT, RZ)		92,923
Parklands (Local, State, National)		48,871
Forests in Parkland		32,548
Municipalities with own stormwater management programs	*Rockville*	8,644
	Gaithersburg	6,402
	Takoma Park	1,339
State and Federal Properties		38,791
State Maintained Roads	Miles	1,580
	Acres	2,317
Existing Controls		
Stormwater BMPs	(2004)	41,956
	(2003)	45,660
Drainage to Stream Restoration Projects	(2004)	1,366
	(before 2004)	1,814

Turkey Branch Watershed

A detailed assessment of the Turkey Branch subwatershed and a restoration schedule was submitted in January, 2003 as required in the Permit. Design and construction of restoration and retrofit projects have been delayed because of site constraints and administrative requirements associated with federal transportation program grant funds Two new stormwater management ponds for control to 217 acres and a dry pond retrofit for 189 acres are expected to be constructed during 2006. Two stream restoration projects in Lower Turkey Branch, covering impacts in 1.7 linear miles of stream, are expected to be completed by spring, 2007.

Pre-construction monitoring was conducted during 2002 and 2003. Post-construction monitoring will take place one year, three years and then five years after completion of the projects to assess changes in stream condition. Summary tables and narrative ratings for benthic and fish IBIs for both 2002 and 2003 were provided in the annual report for 2003.

Next Restoration Watershed: Lower Paint Branch

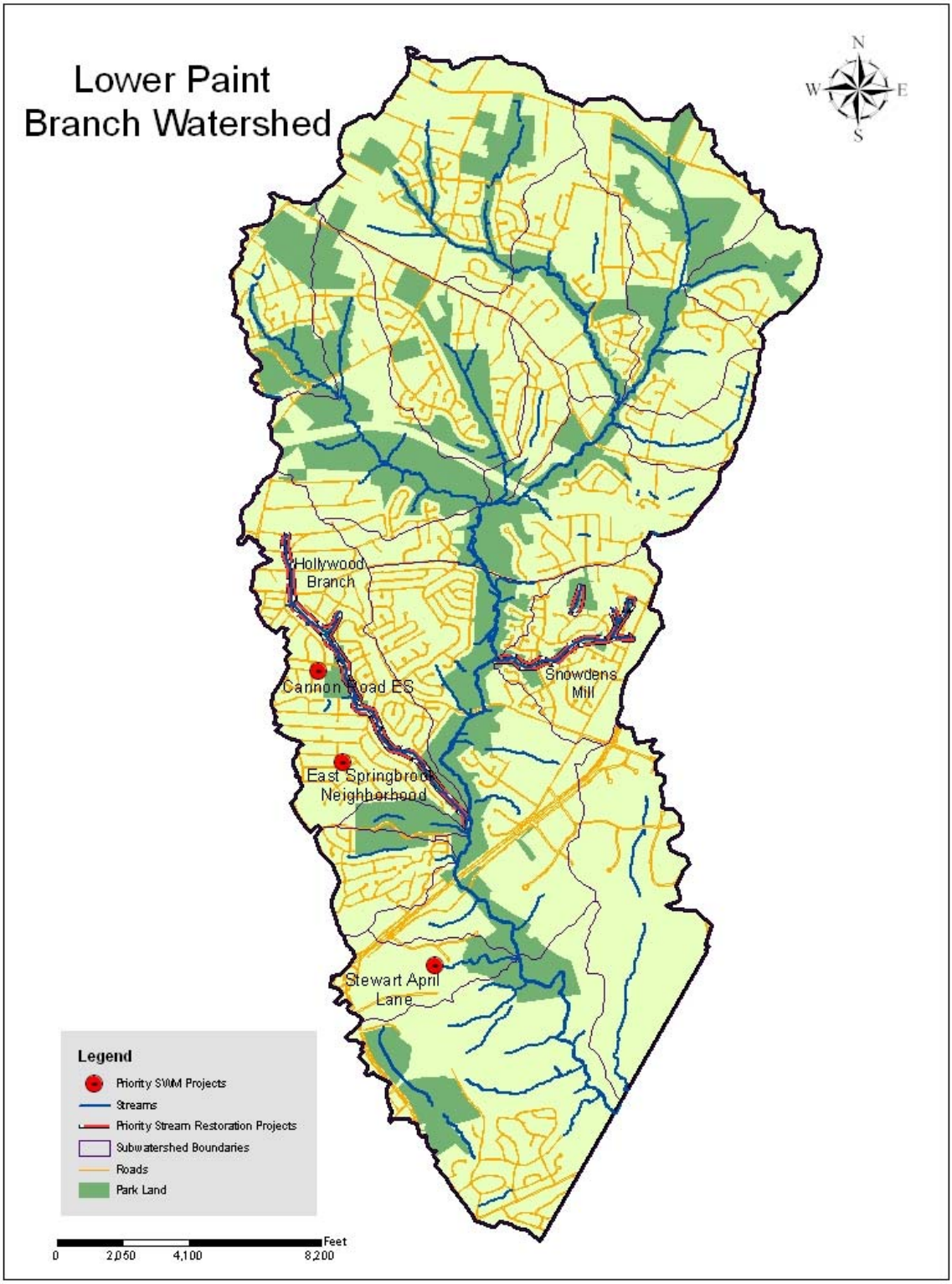
The County has selected the Lower Paint Branch as next to meet the Permit-required watershed restoration goal. Hollywood Branch, Snowdens Mill Tributary, and Stewart April Lane will be the three tributaries of emphasis.

The stream conditions for these three subwatersheds range between fair to poor, reflecting the urban landscapes in these subwatersheds. The Lower Paint Branch Watershed Study (Draft 2005) assessed and prioritized stream restoration and stormwater management opportunities for Hollywood Branch and Snowdens Mill Tributary subwatersheds.

In addition to projects in these two subwatersheds, the USACE (1994) identified the Stewart-April Lane subwatershed as a priority for constructing a stormwater management facility that captures runoff from its densely developed drainage. This subwatershed has been selected for the County's Permit-required long-term discharge characterization monitoring. Details of existing conditions and planned retrofit have been previously provided.

The identified stream restoration and stormwater management represent potential solutions in these three subwatersheds that will improve stream conditions and water quality in the Lower Paint Branch watershed. Figure III-F5 displays the locations of the proposed projects for the Hollywood Branch, Snowdens Mill, and Stewart-April Lane subwatersheds.

Figure III-F5. Potential Runoff Treatment Projects in next Restoration Watershed



Hollywood Branch Subwatershed

The Hollywood Branch watershed consists of an 844 acre urbanized landscape that is crisscrossed with a network of roadways and older residential development. The cumulative impacts from urbanization have degraded stream conditions throughout Hollywood Branch. Montgomery County's Stream Protection Strategy Update (DEP, 2003) documented fair stream conditions in the Hollywood Branch watershed. These conditions are the result of uncontrolled runoff increasing the peak flow conditions from frequent storm events, which have contributed to increased downstream velocities causing severe erosion with exposed vertical banks, high sedimentation, channel enlargement, and degraded instream habitat. The watershed study identified three stream restoration reaches totaling two miles and two stormwater management opportunities to address the cumulative impacts in this urbanized watershed.

Stream Restoration

- Reach 1 is located between Laurie Drive and the confluence with Paint Branch. This reach is in the early adjustment period, which is evident by the high bank erodibility index, poor Pfankuch rating (channel stability), very high near bank stress. The study recommends restoring the reach to a more stable plan form by reconstructing the streambanks in areas of high stress, and providing grade control.

- Reach 2, located between Laurie Drive and Cannon Road, is an unstable reach associated with a high width depth ratio, a low entrenchment ratio, fair pfankuch rating, high bank erodibility index and very high near bank stress. As a result of these field measurements, the stream is characterized as having a high sediment supply. The study recommends reconfiguring the stream channel to improve sediment transport and install grade control to provide a more stable plan form.

- The third reach, located between Cannon Road and Randolph Road, is an unstable reach characterized by a high width to depth ratio, low entrenchment ratio, high bank erodibility index , high bank height ratio and very high near bank stress. The study recommends providing floodplain access to reduce streambank erosion and provide a more stable plan form.

Stormwater Management

- The watershed study identified the Cannon Road Elementary School and the East Springbrook Neighborhood as two locations that could be retrofitted to incorporate low impact development techniques. The school site has opportunities for installing bioretention and other innovative infiltration devices. The East Springbrook Neighborhood provides opportunities to enhance the drainage swales by filtering and infiltrating the runoff before ultimately discharging into Hollywood Branch.

Snowdens Mill Tributary Subwatershed

Snowdens Mill Tributary is a 407 acre residential watershed with degraded stream conditions associated with the runoff from existing development. This has led to the poor conditions documented in the Montgomery County's Stream Protection Strategy Update (DEP, 2003). Runoff from the existing development has increased downstream velocities causing channel instability, high sedimentation and degraded instream habitat, resulting in an impaired biological community.

Due to these conditions, the watershed study recommends addressing 3 stream restoration reaches totaling approximately 1 mile.

- Reach 1, located between the confluence with lower Paint Branch and Serpentine Way, is an unstable reach with a high width to depth ratio, low entrenchment ratio, high bank erodibility index, and very high near bank stress. Proposed study recommendations include improving floodplain access, and installing grade controls to provide a more stable plan form.

- Reach 2 is a degraded stream channel located between Serpentine Way and Falling Creek Road. This deeply incised reach has a low width to depth ratio, a moderate entrenchment ratio, fair to poor Pfankuch rating, very high bank erodibility rating, and very high near bank stress. Watershed study recommendations include providing floodplain access, installing grade control, enhancing riparian buffers and establishing a stable plan form.

- Reach 3 is a headwater section that is located between Falling Creek Road and Old Columbia Pike. This reach is an unstable channel with a low width to depth ratio, moderate entrenchment ratio, very high bank erodibility index, and very high near bank stress. Study recommendations include using restoration techniques to reduce shear stress, enhance riparian buffers and decrease sediment deposition.

G. Program Funding

The Permit requires the County to submit a fiscal analysis of its expenditures and maintain adequate program funding to comply with all conditions of this permit. Table III-G1 compares expenditures in FY03 with those budgeted by fiscal year through FY06. The County's fiscal year runs from July 1 of one year to June 30 of the next. The County proposes a budget of $12.9 million to comply with Permit requirements during FY06.

In FY06, funding levels will return to those closer to prior fiscal years. During FY05, there was a substantial increase under Watershed Restoration CIP for watershed assessments, project identification, and project construction represents. These represented the single largest category of total expenditures, about 51% proposed for FY05. The reduced funding request for FY06 reflects the planned initiation of fewer projects. The increased rate of implementation during FY05 produced a significantly greater project load that must be effectively managed for successful completion.

Other reductions represent some consolidation of functions for greater program effectiveness. Within the DPS, for example, the reduction in funds expended for casework management reflects that some duties have been consolidated and staff have been cross-trained leading to some efficiencies. More staff time had to be allocated to right-of-way permit processing because of a substantial backlog in releasing permits and an onerous process to transition completed work to DPWT.

One apparent significant funding reduction is shown for water quality enforcement, from over $200,000 from FY03-04 down to $147,000 for FY05. There was no change in staffing or level of efforts but the DEPC has instituted a more detailed case tracking system to increase the accuracy of time accounting for investigations of water quality incidents.

From FY05 to FY06, the category with the greatest increase was that for the Stormwater Maintenance Inspections and Facility Repairs. The percentage of the total budget increased from about 20% for FY05 to about 32% proposed for FY06. This reflects an increase in the number of structures being taken into the program and number of repairs being completed.

TABLE III-G1. Montgomery County's Funding for Fiscal Years (FY) 2003-2006 for Permit-required Programs. ***(CIP=Capital Improvement Program).***

PERMIT CATEGORY	Thousand $s by fiscal year			
	FY03	FY04	FY05	FY06
C. Source Identification Storm Drain Inventory	31*	98	195	160
D. Discharge Characterization *Outfall and Instream Station Water Chemistry Monitoring*	50	50	50	50
E. Management Programs				
Stormwater/Sediment Control Casework Management	369	394	322	256
Plan Review-Stormwater Management and Sediment/Erosion Control	864	924	1,220	1,306
Maintenance Inspections	989	899	1,379	995
Stormwater Facility Repairs *WQPC* *operating*	1,005** 26	2,773	1,941	3,056
DEP Public Outreach and Coordination	333	339	265	265
Water Quality Discharge Law Enforcement	246	268	147***	161
Inspection-Stormwater Management and Sediment/Erosion Control	945	956	1,178	1,319
Street Sweeping *DPWT* *DEP*	11.7	208 112	208 112	208 112
Baseline and Reference Stream Monitoring *(includes integrated Discharge Characterization and Design Manual programs)*	574	572	612	751
Countywide Groundwater Monitoring Program	185	262	236	155.5
Watershed Assessments and Action Plans *(includes inventories, planning studies, project design, and construction)*: *CIP*	5,395	4,267	8,220	3,779
TOTAL	11,023	12,148	16,085	12,899

* *Reduced from budgeted $140,000 to meet mandated mid-year reductions.*

** *Reflects establishment of Water Quality Protection Charge (WQPC) to fund phase-in of public maintenance responsibility for privately-owned residential facilities*

*** *Apparent reduction not due to reduction in effort but in more accurate tracking procedures. This figure represents calendar year 12 month for 2004 not fiscal year 12 month.*

H. Assessment of Controls

The permit requires the County to annually submit estimates of expected pollutant load reductions as a result of its proposed management programs. Due to mapping discrepancy, the number of acres under stormwater management control decreased by approximately 10%. Much of this apparently "lost" acreage was from redundant structures, either multiple on one site or in a series to one facility. With this decrease in controlled acreage, the calculated loads reductions could be less than those calculated with the 2003 data. Given that these urban BMP database flaws have been identified, new loads reductions will be calculated next year with more accurate drainage area information.

Table III-H1 shows the estimate of TN and TP annual stormwater loads from developed lands and the reductions associated with existing stormwater controls in the County from 2003. Approximately 35.1% of all developed lands are under some form of stormwater management, with an estimated 8.4% reduction in TN and a 16.9% reduction in TP loadings in runoff due to those controls.

During 2005, the DEP will complete installation and monitoring of several alternative stormwater management facilities. These fall in the category of Low Impact Development (LID) retrofits being used by the County in more of its densely-developed, older urban watersheds and in particular, the Anacostia. It is hoped that adding many of these small, on-site facilities in areas with no current stormwater runoff management will contribute to cumulative improvements to the receiving stream. This is particular critical in areas where few projects were identified through the watershed study process or where there are significant logistic obstacles to constructing more traditional stormwater management facilities.

TABLE III-H1. Stormwater Delivered Loads (lbs) for the Year 2003 from Developed Acres in Montgomery County

Annual Report		**TN (lbs/yr)**	**TP (lbs/yr)**
Acres Developed	147,464	1,268,190	122,395
Acres with BMPS (estimated)	51,713	1,161,908	101,662
% acres controlled	35.1	% reduced 8.4	% reduced 16.9
average % reduction efficiency (based on Bay Program efficiencies by type		21.3	40.0
average Loading (lbs/acre) (based on County monitoring 1994-2001)		8.6	0.83

PART IV. SPECIAL PROGRAMMATIC CONDITIONS

Tributary Strategies

The Permit requires that the County assist with the implementation of the Tributary Strategies to meet nutrient reductions goals for the Tributary Basins that it lies within. These are the Middle Potomac and the Patuxent River Tributary Basins. During 2004, the County continued its participation on developing Tributary Strategy Implementation Plans with particular concern that the strategies reflect the level of effort being conducted in conjunction with the Permit program. The Implementation Plans had not yet been finalized as of July 1, 2005.

The County has continued its activities in ongoing multi-jurisdictional efforts to protect the Anacostia and the Patuxent Reservoirs Watershed. This has led to cooperative funding for monitoring, modeling, and restoration and retrofit project inventories, design, and construction. As part of these efforts, the County monitoring results are being used for regional screening and priority setting in these watersheds. The programs and projects being implemented through these watershed groups contribute toward the County's Permit-required watershed restoration goal and also the pollutant reductions that will be needed to meet the Tributary Strategies nutrient caps.

EPA Audit

During September of 2004, the EPA Region III conducted an audit of the County's Permit Program. This involved three days of office interviews and field visits for sediment and erosion control, stormwater management facility maintenance, and the County's industrial facilities operations. The EPA audit found the County well along with implementation and commented on three areas which went beyond the requirements. These were 1) creation of the Storm Drain Committee by the DPWT Highway Maintenance Division to address drainage areas for which responsibility was not easily determined; 2) annual (rather than triennial) inspections of belowground structures; and 3) fully achieving requirements for watershed restoration and assessment including use of rotating watershed stream monitoring to cover all County watersheds during the five-year permit cycle.

The EPA audit identified two actions required to meet specific permit requirements. The first was the need to complete the delineation of drainage areas to outfalls of the storm drainage network. The County has accelerated its efforts to complete mapping and drainage areas of all structures constructed since the last major submission to MDE in 1998 and also in completing the drainage area mapping of earlier structures.

The second was the need to submit the implementation status of pollution prevention plans for the Resource Recovery and Composting facilties as part of the annual submissions, based on the requirements of Section III-E of the County's Permit. The operations at these two facilities are covered under Individual Permits issued by MDE which require extensive monitoring and reporting. The MDE included the requirement to report on stormwater pollution prevention plan compliance status to increase local government recognition of the General Permit, of the need for compliance to reduce pollutants in runoff from County-owned industrial facilities, and to establish a routine reporting system. The General Permit has no routine monitoring or reporting requirements. In the next round of municipal permits, the MDE has begun specifying that this annual reporting

requirement applies only to those facilities covered under the General Permit for Stormwater Discharges from industrial facilities and will therefore not apply to facilities with individual permits.

Next Permit Cycle

This report is the fourth in this five-year permit cycle. The MDE has indicated that this annual report will provide the information used to develop the next Permit for the County. The County's existing permit is due for re-issuance in July 2006, although all current Permit requirements will stay in force until a new Permit is issued. Major components to be included in the next Permit cycle are shown below.

Legal Authority

The DEP and the DPS have begun examining current language of the County Code, Chapter 19, that deals with stormwater management, sediment and erosion control, and stormwater maintenance inspections. The two agencies are proposing updates and corrections to reflect changes in related programs since the last revision as well as adding language to strengthen the permitting, inspections, and enforcement process. The DEP would like to have legislation in place by April, 2006 to allow development of next year's water quality protection charge bills to reflect changes proposed for that program. The status on adoption of revising this section will be provided in next year's report.

Source Identification

During the next permit term, the County proposes to continue to inventory and map potential pollutant sources and means of conveyance into receiving streams and other water bodies using its GIS capabilities for source identification, natural resources mapping, and program tracking. This will include completion of drainage areas to all existing major outfalls (>=36" in residential and commercial areas and >=15" in industrial areas). The DEP anticipates that it will complete its comprehensive geographically-linked database of all facilities with environmental permits during the next Permit period.

Discharge Characterization

The Permit requires that "Montgomery County shall contribute to Maryland's understanding of stormwater runoff and its effect on water resources by conducting a monitoring program." The DEP proposes to continue paired outfall and instream integrated water chemistry, biological, and stream morphology monitoring in the Stewart-April Lane Tributary and Lower Paint Branch Mainstem. Project construction has been delayed until the end of this Permit period. It will not be possible to fairly evaluate type and magnitude of water quality and stream resource improvement from the implemented project without multiple years of post-construction data.

The DEP also proposes to continue the required Design Manual monitoring in the Clarksburg Special Protection Area effort. The build-out of this area will take many years and multiple years of post-build out data will be necessary to determine the effectiveness of the 2000 Design Manual criteria for stream channel protection.

Management Programs

The Permit requires that the County maintain specific jurisdiction-wide management programs to control stormwater discharges to the maximum extent practicable. This includes the areas represented by the co-permittees of Chevy Chase Village, Friendship Heights, and the Towns of Chevy Chase, Kensington, Poolesville, and Somerset.

The County will continue its programs for stormwater management facility inspection and maintenance, stormwater management permitting and plan review, sediment and erosion control enforcement, illicit discharge identification and elimination, stormwater pollution prevention plans for County-owned industrial facilities, and public outreach. These are an integral part in the success of the County's stream resource protection programs and, except for the illicit discharge and stormwater pollution prevention plans for industrial facilities, existed prior to the establishment of the federal Permit program.

Outfall Screening

The County proposes to continue its annual screening of 100 outfalls in targeted watersheds. The watersheds will be selected based on the history of environmental compliance issues and linking with the enhanced Environmental Partners Program. This is a business outreach program which emphasizes environmental compliance and also voluntary pollution prevention to reduce impacts to the environment and employee health. A key feature of the enhanced program will be a tracking database to document the environmental benefits associated with the compliance improvements and pollution prevention measures taken by the participating businesses.

Watershed Restoration

The Permit requires that the County continue its systematic assessment of water quality within all of its watersheds and to maximize water quality benefits in priority subwatersheds using efforts that are definable and the effects of which are measurable. The County will continue its integrated approach for watershed restoration which includes monitoring and assessment of stream resource conditions and potential sources of impairments, identification of stormwater retrofit and stream restoration opportunities, enforcement of the water quality discharge law, and educating and involving the general public in protecting its local resources.

The County has a well-established watershed-based approach which combines constructed projects with environmental stewardship and pollution prevention to provide water quality benefits to the maximum extent practicable. The DEP anticipates an increase in smaller, on-site facilities (the LID approach). This is because of the increasing costs and logistics constraints that are being encountered in the construction of more traditional stormwater management facilities in densely-developed urban areas, even with available publicly-owned parkland for access and siting.

Along with its countywide monitoring, assessment, and project implementation, the County will continue targeted watershed restoration tracking in the Turkey Branch and in the Lower Paint Branch. The restoration efforts in the Turkey Branch watershed were delayed during this Permit cycle due to site logistics and administrative issues related to grant funding. In the Lower Paint Branch, the discharge characterization monitoring at Stewart-April Lane and the lower Paint Branch

mainstem began during 2002 and will need to continue during the next Permit. Otherwise, there will be insufficient post-construction monitoring to fairly evaluate the effectiveness of these projects on improving watershed water quality and stream resource conditions.

Assessment of Controls

The existing permit requires an annual reporting on assessment of controls. This has been accomplished in the current and previous permit by loads estimation using pollutant loads per acre per land use type and an accounting by BMP type. The County recognizes the value of annual reporting on number and type of BMPs being used on new development, rate of implementation of retrofits and restoration projects, and results of its watershed-based monitoring program to identify impairments as well as track stream resource condition changes. However, there is very little change from one year to the next in total loads or percentage of developed acres under control.

The County proposes that for the next permit period the required reporting frequency for pollutant loads assessment be twice--with the report for the second year and report for the fifth year. This approach would still require documentation on implementation of controls on an annual basis and reporting on results from the ongoing, rotating watershed stream resource condition assessments.

MDE Annual Review for Year 2003

In the review of the 2003 Annual Report, the MDE identified three specific items under the DPWT "Management Programs" that the County will need to address during the next year and into the next Permit cycle.

- The MDE pointed out that the Stormwater Pollution Prevention Plans for three of the DPWT's facilities covered under the Industrial General Permit need to be updated. This need was initially identified through the County's own Pollution Prevention Program several years ago and re-emphasized during this year's annual site assessments. The MDE noted that DPWT needs to find resources to update the Plans for the Seven Locks, Gaithersburg/Equipment Maintenance Operations Center, and the Silver Spring/Brookeville facilities, either by consultant or using in-house staffing resources.

- The MDE evaluation also stated that "[s]elf-assessment by the County indicates that improvement can be realized by better inspection and record keeping, eliminating outdoor vehicle washing, and improving employee training." These needs have been noted repeatedly through the County's own Pollution Prevention Program, the most critical need being that of routine training to increase employee awareness about pollution prevention and compliance at the work site. The DPWT is evaluating options to update these stormwater pollution plans as soon as possible, to assure routine assessment and tracking for plan implementation, and to increase employee awareness about environmental compliance at County facilities.

- The MDE evaluation recommended that DPWT develop systematic procedures for storm drain system maintenance similar to those being used for the County's stormwater facility maintenance. The current storm drain program is complaint driven, with less than 0.5% of the total amount of the County's storm drain system maintained per year.

Who to Call If you Have a Watershed or Water Quality Question:

Montgomery County Agencies

Department of Environmental Protection (DEP)

http://www.montgomerycountymd.gov/siteHead.asp?page=/mc/services/dep/index.html

Countywide Monitoring 240-777-7726
Environmental Partners 240-777-7758
Illegal Dumping Hotline 240-777-7700
Rainscapes 240-777-7720
Stormwater Management Structures 240-777-7744
Water Pollution 240-777-7770
Watershed Outreach and Stewardship 240-777-7714

Department of Permitting Services (DPS)

Sediment from construction site entering streams 240-777-6259
Stormwater management and sediment control plan review issues 240-777-6320
Water supply wells and septic tank issues 240-777-6300

Department of Public Works and Transportation (DPWT)

Blocked storm drain, inlet pipe or erosion from public storm drain 240-777-ROAD
Recycling and hazardous household waste disposal 240-777-6400

Soil Conservation District

Agricultural best management practices 301-590-2855

Inter-County Agencies

Maryland-National Capital Park and Planning Commission (M-NCPPC)

Problems with streams, trash and debris in County parks and in streams 301-495-2535
Weed Warriors (Volunteer Invasive Plant Control Program) 301-495-2464

Washington Suburban Sanitary Commission (WSSC)

Patuxent Reservoirs Watershed Protection Agreement 301-206-8100
Discolored or odorous drinking water; sanitary sewer problems 301-206-4002

Maryland State Agencies

Maryland Department of the Environment (MDE)

Emergency Response (hazardous materials spills or discharges) 410-537-3937
Fish kills 410-974-3238

Department of Natural Resources (DNR)

Illegal dumping on state park land 301-924-2127